A Review of the 1984 Commercial Salmon Fisheries on the Queen Charlotte Islands (Areas 1, 2W and 2E): Catch, Escapement and Management Strategies

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November 1985

A REVIEW OF THE 1984 COMMERCIAL SALMON FISHERIES ON THE QUEEN CHARLOTTE ISLANDS (AREAS 1, 2W AND 2W): CATCH, ESCAPEMENT AND MANAGEMENT STRATEGIES

by

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ABSTRACT

Orman, Lynda. 1985. A review of the 1984 commercial salmon fisheries on the Queen Charlotte Islands (Areas 1, 2W and 2E): catch, escapement and management strategies. Can. MS Rep. Fish Aquat. Sci. 1839: 106p.

In 1984, the Queen Charlotte Islands experienced the largest salmon fisheries in over a decade. Highlights included an estimated stock size of 2.4 million pink salmon returning to the Yakoun River, of which approximately 700,000 were taken in terminal area catch by the seine and gillnet fleet; an extensive fall chum fishery on the east and west coasts of the southern Queen Charlotte Islands which harvested nearly 400,000 chum salmon; and the third highest interception catch of sockeye recorded for the west coast of the Queen Charlotte Islands (Rennell Sound), in the order of 83,000 sockeye. A commercial net fishery on the first enhanced returns from the Pallant Creek chum hatchery in Cumshewa Inlet resulted in a catch of just under 50,000 chum salmon; over 70% of these were estimated to be hatchery fish as determined through a mark recovery program.

The troll fishery occurring in the offshore waters surrounding the Queen Charlottes harvested peak numbers of chinook salmon despite severe conservation requirements and management actions which reduced fishing time significantly. A QCI troll chinook harvest of nearly 175,000 fish was concentrated in Dixon Entrance and the northern shore of the Queen Charlotte Islands. This northern area accounted for over 70% of the total QCI troll catch which was nearly 60% greater than the previous 10-year average chinook catch for Area 1. As such it represented the area of highest chinook catch north of Vancouver Island.

This report reviews the 1984 commercial salmon fishing season and management actions on the Queen Charlotte Islands. It documents how management decisions were made for commercial fisheries in Statistical Areas 1, 2W and 2E in the waters surrounding the Queen Charlotte Islands and includes information on in-season stock assessment, describing how this information was interpreted and what the results were in terms of catch and escapement.

Key words: Queen Charlotte Islands, 1984 commercial salmon fisheries, management strategies, assessment, catch and escapement.

RÉSUMÉ

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Aux îles Reine-Charlotte, l'année 1984 s'est révélée une des meilleures pour la pêche du saumon depuis plus d'une décennie. Soulignons les faits suivants: environ 2,4 millions de saumons roses ont remonté la rivière Yakoun dont à peu près 700 000 ont été capturés en estuaire par la flotille de senneurs et de bateaux de pêche au filet maillant; une importante pêche d'automne du

saumon kéta sur les côtes est et ouest des îles Reine-Charlotte méridionales a rapporté presque 400 000 poissons et la troisième plus importante pêche d'interception du saumon rouge, de l'ordre de 83 000 individus, a été signalée sur la côte ouest des îles (détroit de Rennell). Dans l'inlet Cumshewa, une pêche commerciale au filet des premiers saumons amontants issus des efforts de mise en valeur du saumon kéta à la piscifacture du ruisseau Pallant a produit un rendement de presque 50 000 poissons, d'après les données recueillies dans le cadre d'un programme de récupération de marques; on a déterminé que plus de 70 % de ceux-ci étaient des poissons d'élevage.

Pour ce qui est de la pêche aux lignes traînantes dans les eaux hauturiéres baignant les îles Reine-Charlotte, un nombre record de saumons de printemps ont été capturés malgré de rigoureuses mesures de conservation et de gestion qui ont nettement réduit la durée de la pêche. Ainsi, presque 175 000 saumons de printemps ont été pris principalement dans l'entrée Dixon et sur la côte nord des îles, où plus de 70 % des prises totales ont été réalisées. Cette prise est presque de 60 % plus élevée que la moyenne des dix années précédentes dans la zone 1. De fait, celle-ci constituait le point de capture du plus grand nombre de saumons de printemps au nord de l'île Vancouver.

Le présent rapport donne une vue d'ensemble de la saison de pêche commerciale du saumon en 1984 et des mesures de gestion prises aux îles Reine-Charlotte. Il porte sur le processus de prise de décisions gestionnelles en matière des pêches commerciales dan les zones statistiques 1, 2W et 2E des eaux limitrophes aux îles Reine-Charlotte, et renferme des données sur l'évaluation des stocks en saison; de plus, il décrit l'interprétation des données et les résultats en termes de prises et d'échappées.

Mots-clés: îles Reine-Charlotte, pêche commerciale du saumon en 1984, stratégies gestionnelles, évaluation, prises et d'échappées.

INTRODUCTION

Three distinct types of commercial salmon fisheries were conducted on the Queen Charlotte Islands (QCI) in 1984:

1. an interception net fishery in Areas 1 and 2W from mid-July to early August which targeted on passing sockeye and pink stocks,

2. local pink and chum salmon net fisheries conducted from August through October in the coastal bays and inlets surrounding the Queen Charlotte Islands, which harvested salmon stocks destined to spawn in the local streams, and

3. an offshore troll fishery conducted from mid-June and July through late September which focused on catching chinook, coho and pink salmon.

This report reviews separately each of these fisheries in terms of pre-season fishing plans, in-season management, and post-season assessment. Catch, escapement and management strategies are documented.

Emphasis on fisheries management documentation was stressed by Pearse (1982). This is the second of a series of reports accounting for the results of fisheries management decisions on commercial salmon fisheries and spawning escapements on the Queen Charlotte Islands. The initial report (Orman and Sprout 1984) reviewed catch, effort, escapement and fisheries management histories for the QCI salmon fisheries with particular emphasis on the 1983 interception net fisheries in the Rennell Sound and Cohoe Point - Pillar Bay areas.

The following descriptive sections review the Statistical Areas and fisheries management procedures for the Queen Charlotte Islands. Except for a few additions, this information was extracted largely from Orman and Sprout (1984).

AREA DESCRIPTION

The Queen Charlotte Islands lie approximately 100 km off the west coast of Canada in northern British Columbia and cover a land mass of 6900 km^2 (Fig. 1). The North American continental shelf falls steeply on the westward side of the islands, while a submerged plateau and former land mass spreads to the east in the shallower waters of Hecate Strait. North and southward migrations of salmon and other marine species occur in the waters surrounding the Queen Charlotte Islands. The islands are comprised of two main land masses: Graham Island to the north and Moresby Island to the south (Fig. 1), which together bear approximately 200 salmon spawning streams. Numerous smaller islands are scattered along the shores of the two main islands, particularly to the southeast. The highly indented coastline contains a number of productive estuaries with good rearing habitat for salmonids as well as other marine species, and provides sheltered access to the fishing fleet.

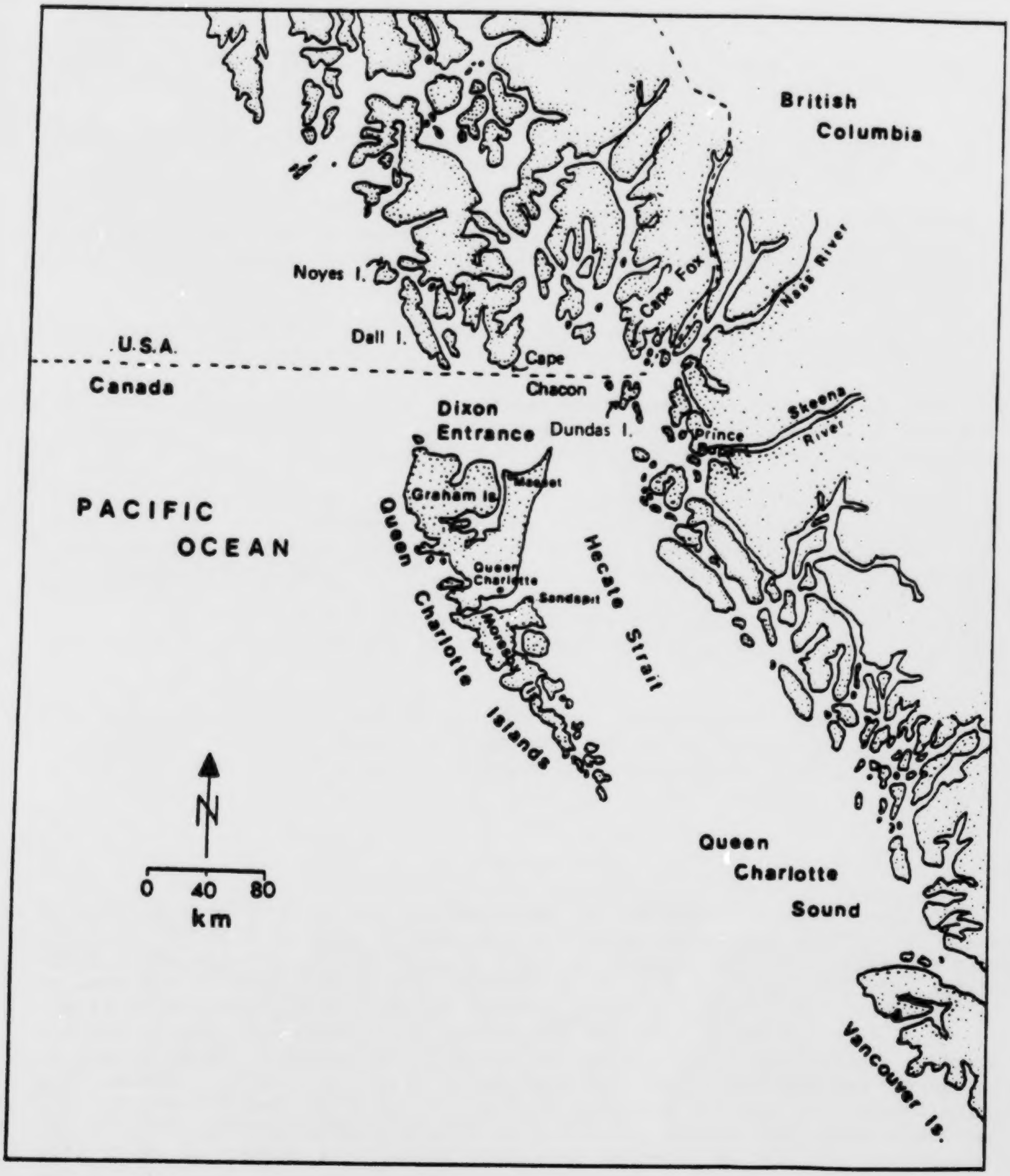

British Columbia
Noyes I.
Dall I.
U.S.A.
Canada
Cape Fox
Nass River
Cape Chacon
Dixon Entrance
Dundas I.
Prince Rupert
Skeena River
Masset
Graham Is.
PACIFIC OCEAN
Queen Charlotte Islands
Queen Charlotte
Sandspit
Moresby
Hecate Strait
N
0 40 80
km
Queen Charlotte Sound
Vancouver Is.

Fig. 1. Geographic location of the Queen Charlotte Islands.

The waters surrounding the Queen Charlotte Islands comprise Statistical Areas 1, 2 West and 2 East (Fig. 2) of the Department of Fisheries and Oceans (DFO) fisheries operations. A fisheries district office is located in Queen Charlotte City (Fig. 1). In addition, sub-district offices are located in Masset and Sandspit where fishery officers provide protection and assessment of the resource on a more local scale. A sub-regional office located in Prince Rupert (Fig. 1) houses additional northern operations staff, including management biologists and a northern director.

MANAGEMENT PROCEDURES

A general account of procedures followed by the North Coast Operations Branch of DFO in preparing pre-season fishing plans and undertaking in-season management is provided in the following section.

Pre-season stock expectations and fishing plans are developed by the local fishery officer and area biologist and then reviewed with senior managers. Forecasts of returning stock by species and Statistical Area are based on average rates of return and age class contribution of stocks. Because these data are often quite limited in their accuracy due to inconsistent escapement estimation, uncertain or poorly defined stock composition data in the catch, and insufficient and/or biased age composition data, the tendency has been to apply approximate rates of return to the predominant age class or cycle year escapement for Queen Charlotte Islands salmon stocks. The schedule of fishery openings and closures is based on the amount of surplus stock identified and on the anticipated fishing effort; the latter is calculated by applying an estimated catch per unit of effort (CPUE) to the expected number of gear. Time and area limitations such as one-day fisheries with more limited boundaries are a common means of adjusting the anticipated catch to match the expected surplus.

Following the preparation of fishing expectations, fisheries managers meet with an industry advisory board, the Queen Charlotte Islands Advisory Board, to discuss and finalize fishing expectations. This board currently consists of 12 advisors from the fishing industry and includes representatives from each gear type (seine, gillnet, troll, sport) and the processing sector (B.C. Packers and Prince Rupert Fishermen's Co-operative Association). The advisory process is viewed as an integral part of fisheries management and a valuable means of communication and cooperation between DFO managers and members of the fishing industry.

Final fishing plans and stock expectations are published in the Pacific Region Commercial Fishing Guide. It is intended that pre-season forecasts of stock strength and proposed fishing plans as defined in the Commercial Fishing Guide serve as a guideline only. These guidelines are subject to change after further consultation with fishermen, or if stocks return differently than expected.

During the salmon season, fishery officers and biologists meet to evaluate each fishery. Catch, gear size and distribution are reviewed daily, along with information such as test fishery indices, tagging vessel catches and escapement estimates which provide a better indication of run size and timing. Based on

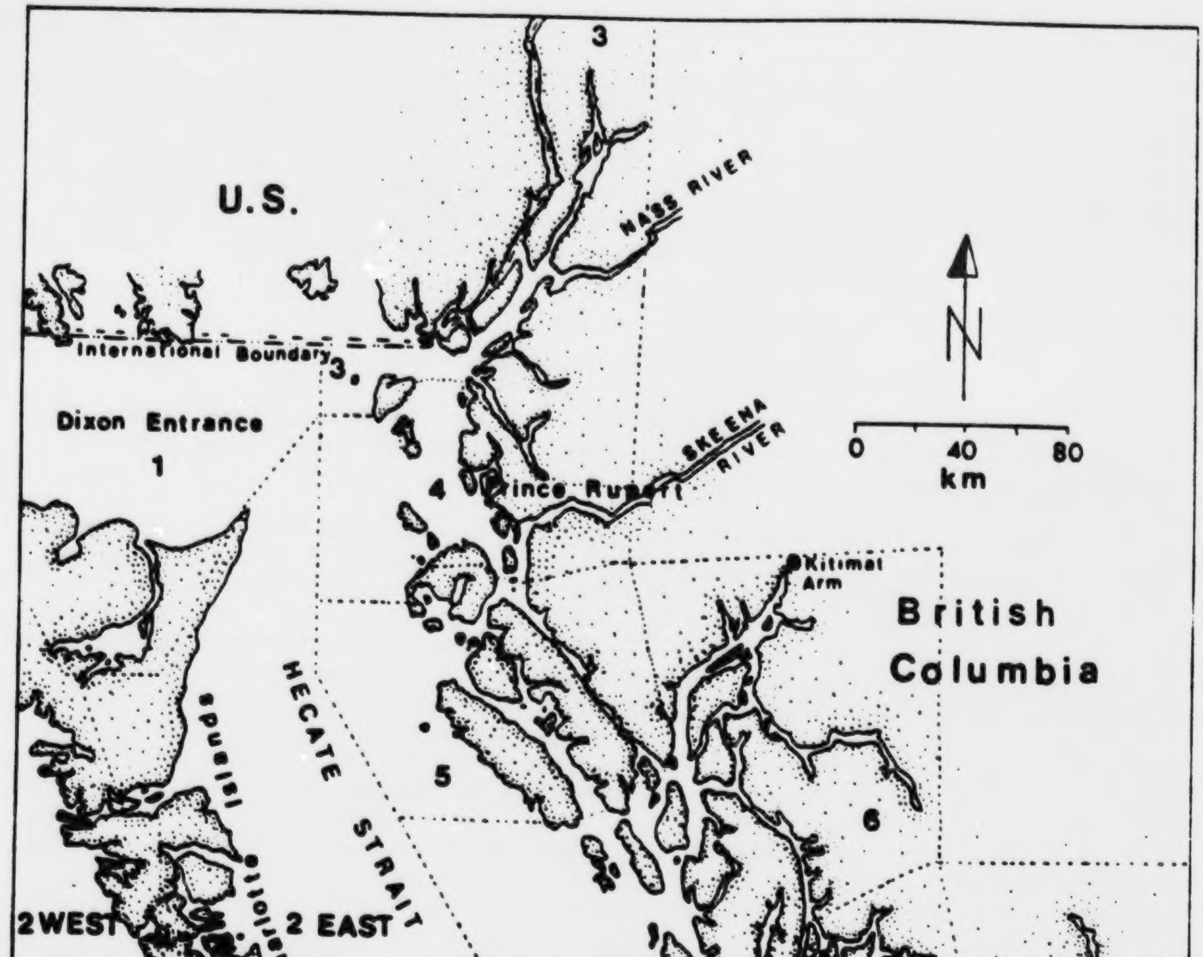

U.S.
International Boundary
Dixon Entrance
NASS RIVER
SKEENA RIVER
Prince Rupert
Kitimat Arm
British Columbia
Queen Charlotte Islands
HECATE STRAIT
2 WEST
2 EAST
Bella Coola
PACIFIC
OCEAN
Area North
Area South
VANCOUVER ISLAND
N
0
40
80
km
1
3
3
4
5
6
6
7
8
8
9
9
10
11
12

Fig. 2. Location of Statistical Areas in northern B.C.

this information, fishing plans are adjusted and reviewed with the area manager and director prior to implementation.

DATA SOURCES

As discussed above, there are a number of information sources used to assess the in-season salmon runs. For the Queen Charlottes area these are discussed in greater detail below.

1. Commercial catches

Information on commercial catches is obtained by fishery officers during fishing openings. Catches are "hailed" or verbally passed to fishery officers by fishermen who for the most part visually estimate their catches. In many cases, particularly with gillnets, catches may be delivered to other vessels (packers) in the fishing area. The officers may collect catch information from the packers; in these instances the fish are usually weighed and counted individually.

Although methods will vary, fishery officers obtain catches from a proportion of the fleet and then expand this, based on aerial or patrol vessel gear counts, to arrive at a total catch for all gear. Usually this requires that the fishing area be subdivided into several smaller areas determined by factors such as species mix in the catch and gear type. Each area would be sampled separately and the results expanded accordingly to arrive at a total catch. In extended fisheries, the fishery officer may sample a large proportion of the fleet and in many instances will obtain catch estimates from virtually all of the vessels.

2. Tagging program

Since 1982, an International Salmon Tagging Program has been carried out by the DFO, the U.S. National Marine Fisheries Service and the Alaska Department of Fish and Game. The purpose of this program was to determine the exploitation pattern of sockeye and pink salmon (tagged in 1982 and 1984 only) in northern B.C. and southeastern Alaska. In 1984, seine and troll vessels were chartered to tag pink salmon in various locations in Areas 1, 3, 4 and 5 and southern S.E. Alaska. Information on catches from seine tagging in Area 1 provided additional data for assessing the salmon runs in this area.

3. Test fisheries

Test fisheries provide a means of indexing the abundance of salmon prior to commercial fisheries. On the Queen Charlotte Islands, a gillnet test fishery is conducted in Cumshewa Inlet to monitor the return of enhanced chum salmon from the Pallant Creek Hatchery. Prior to opening a fishery, mean daily catch per hour, quality appraisals of chum salmon and age data are evaluated against the proportion of the run escaped to date through the counting fence on Pallant Creek. In addition, prior to extension of the fishery in 1984, a seine test fishery was conducted in Rennell Sound in early August to monitor species mix and the abundance of target species, sockeye and pink salmon. Catch samples (tissues, scales) were collected to identify the various stock components comprising the sockeye and pink catches; as well, differential catch information was collected at various sites to identify areas of high chinook interception.

4. Indian Food Fisheries (IFF)

Indian Food Fisheries are conducted usually by seine and gillnet in various locations on the Queen Charlotte Islands. Information from these catches has been used to assess salmon runs. In 1984, catches reported from the Indian Food Fishery in Rennell Sound provided extra information with which to assess passing sockeye and pink stocks. In addition, food fisheries in Skidegate and Masset Inlets helped in the assessment and management of local chum salmon fisheries.

5. Escapements

Another source of information used to manage commercial fisheries is escapement. At the start of the fishing season, the salmon run has not yet entered sanctuaries (i.e holding areas usually adjacent to spawning streams but not open to commercial fishing) or streams, and thus no escapement information is available. However, as the season progresses and fish are observed beyond the limits of the commercial fishery, this information becomes very important. Escapements to date are compared with previous years' escapements in order to evaluate timing and run size and thereby assess fishing plans.

Escapement estimates for the Queen Charlotte Islands are collected in three different ways. The majority of streams are surveyed by foot and visual estimates are made of the number of spawning salmon. A few selected streams have counting fences which provide more accurate counts of spawners. In 1984, counting fences were used on three QCI watersheds to provide daily and cumulative escapement counts: the Yakoun River, Pallant Creek and Copper River. Lastly, occasional aerial surveys provide spawner enumerations for additional streams.

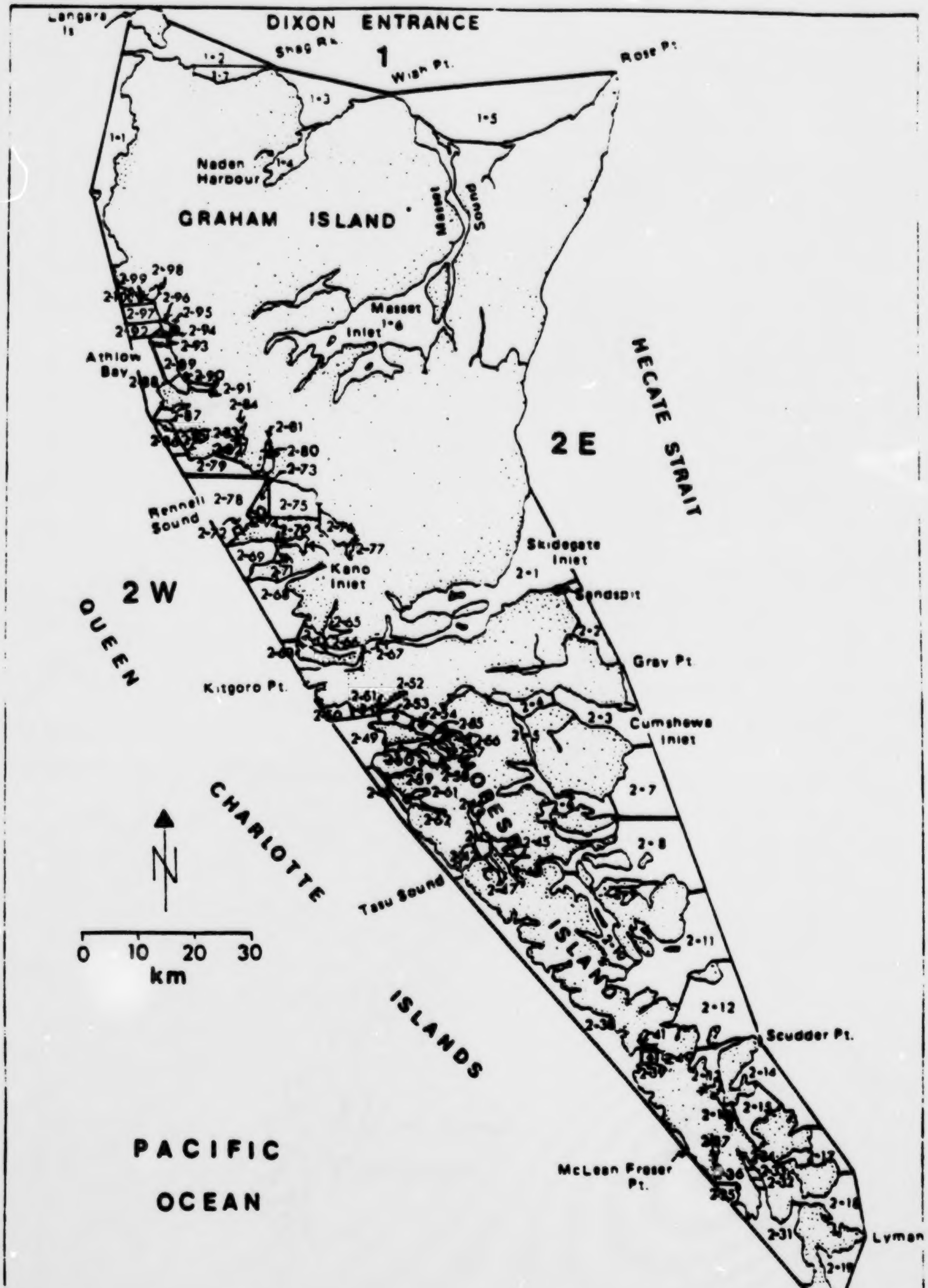
Catch and escapement accounts of all five species of Pacific salmon: sockeye (Oncorhynchus nerka), coho (O. kisutch), pink (O. gorbuscha), chum (O. keta) and chinook (O. tshawytscha) are included in this report. All fishing period dates commence at 0800 hours unless otherwise indicated. Additionally, each Statistical fishing Area is subdivided into Management Units (M.U.) with specific boundaries (Fig. 3), and it is these smaller areas which are actually opened and closed during the season in order to manage the fisheries. Appendix 1 provides a record of all telexes announcing commercial salmon fishing openings on the Queen Charlotte Islands in 1984. Figure 4 shows major geographic locations on the Queen Charlotte Islands referred to in the text.

INTERCEPTION NET FISHERY

AREA 1

1984 Pre-season fishing pattern

The 1984 salmon expectations and proposed net fishing pattern for Area 1 are presented in Appendix 2. No net fisheries were anticipated on local stocks


DIXON ENTRANCE
Langara Is
Snag Rk.
1
Wish Pt.
Rose Pt.
1-2
1-7
1-3
1-5
1-1
Naden Harbour
1-4
GRAHAM ISLAND
Masset Sound
Masset Inlet
1-6
2-98
2-99
2-96
2-97
2-95
2-92
2-94
2-93
Athlow Bay
2-89
2-90
2-88
2-91
2-87
2-84
2-81
2-80
2-79
2-73
Rennell Sound
2-78
2-75
2-72
2-70
2-77
2-69
2-71
Kano Inlet
2-68
2-65
2-64
2-66
2-67
HECATE STRAIT
2E
2W
Skidegate Inlet
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Sandspit
2-2
Gray Pt.
Kitgoro Pt.
2-52
2-61
2-53
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2-54
2-4
2-3
Cumshewa Inlet
2-49
2-5
2-59
2-61
2-62
2-7
2-45
2-8
2-47
Tasu Sound
2-11
2-12
2-38
Scudder Pt.
2-14
2-13
2-17
McLean Fraser Pt.
2-16
2-31
Lyman Pt.
2-19
MORESBY ISLAND
QUEEN CHARLOTTE ISLANDS
N
0 10 20 30
km
PACIFIC OCEAN

Fig. 3. Management Units in Areas 1, 2W and 2E, Queen Charlotte Islands, 1984.

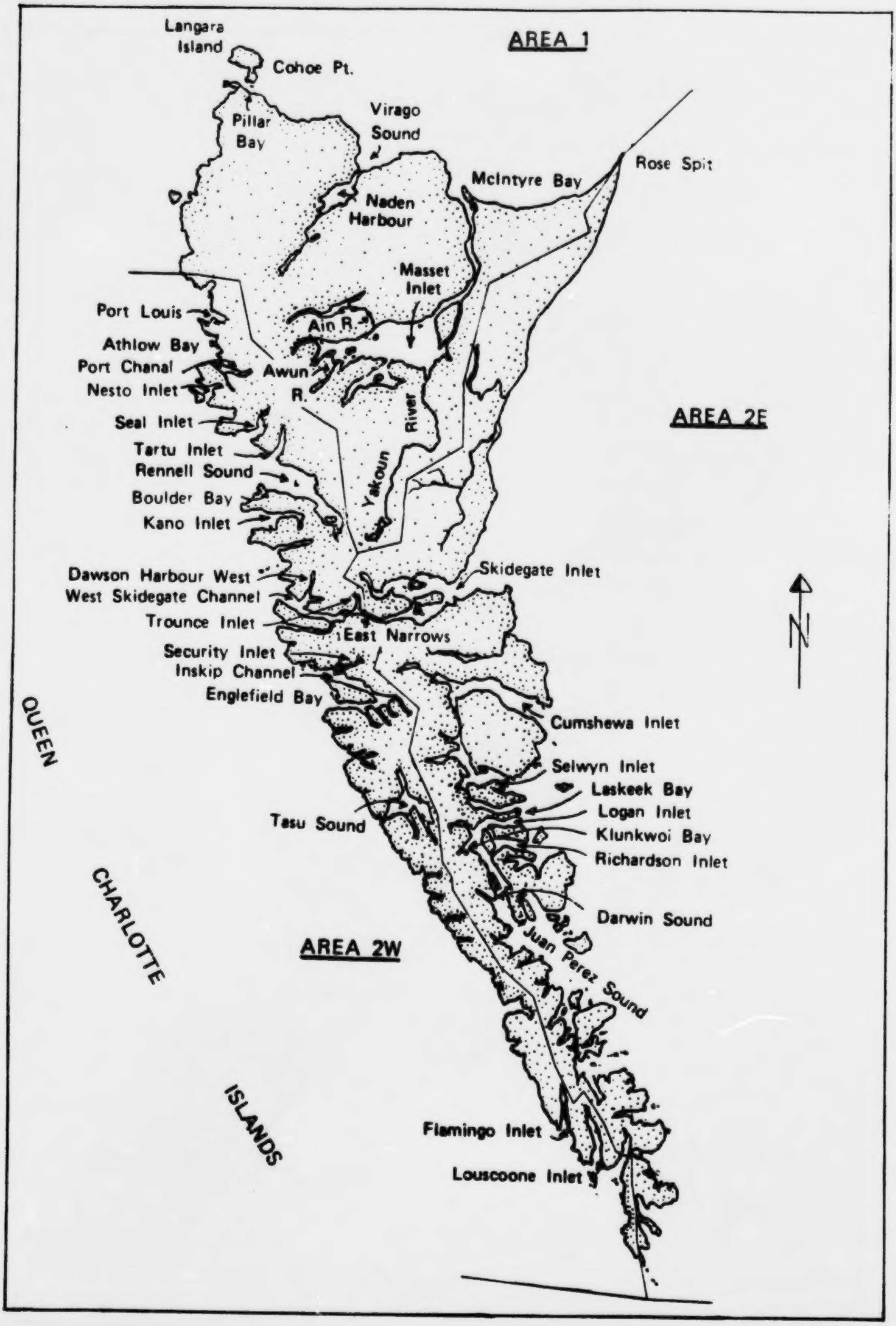

AREA 1
Langara Island
Cohoe Pt.
Pillar Bay
Virago Sound
Rose Spit
McIntyre Bay
Naden Harbour
Masset Inlet
Port Louis
Ain R.
Athlow Bay
Port Chanal
Awun R.
Nesto Inlet
Seal Inlet
Yakoun River
AREA 2E
Tartu Inlet
Rennell Sound
Boulder Bay
Kano Inlet
Dawson Harbour West
Skidegate Inlet
West Skidegate Channel
Trounce Inlet
East Narrows
Security Inlet
Inskip Channel
Englefield Bay
N
QUEEN
Cumshewa Inlet
Selwyn Inlet
Laskeek Bay
Logan Inlet
Tasu Sound
Klunkwoi Bay
Richardson Inlet
CHARLOTTE
Darwin Sound
AREA 2W
Juan Perez Sound
ISLANDS
Flamingo Inlet
Louscoone Inlet

Fig. 4. Major geographic locations on the Queen Charlotte Islands referred to in the text.

as escapements were expected to be less than optimum for all salmon species. Interception net fisheries targeting on passing sockeye and pink stocks of mixed origin were planned for this area. Due to coastwide concerns for declining chinook stocks, a catch limit of 5,000 chinook was applied to Area 1. The catch limit would permit fisheries to continue to harvest target species, while minimizing the incidental chinook catch.

1984 Weekly fishing summary

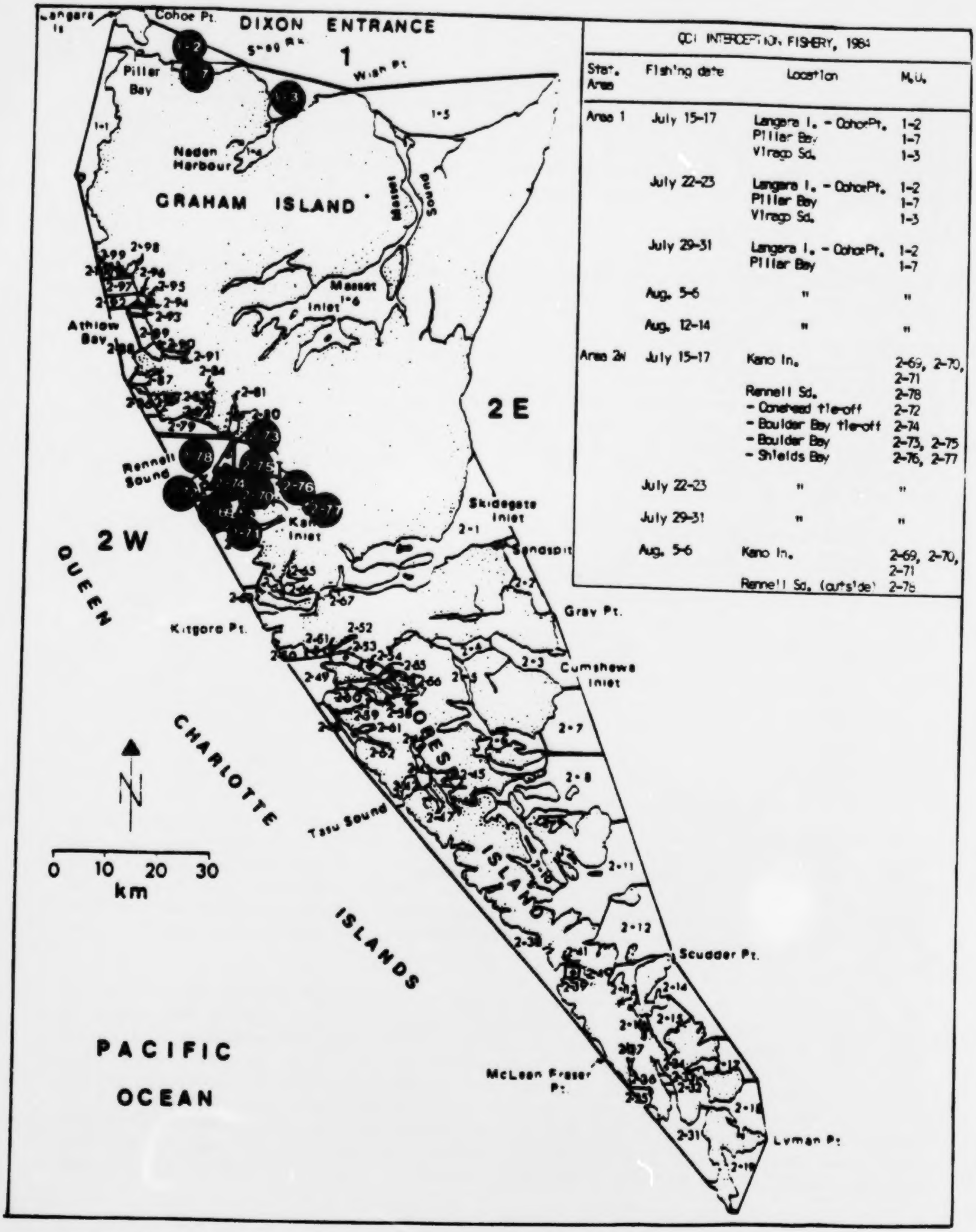
In Area 1, 8 days of salmon fishing were expended during the 1984 interception net fishery which was localized in the Cohoe Point-Pillar Bay area (Fig. 5). The fishery commenced on July 15 for 2 days/week, except for 1-day openings on July 23 and August 6. Table 1 reviews the Area 1 interception net fishing season in terms of weekly pre-season fishing plans, in-season management actions and the rationale for that management. Factors involved in deciding whether to open or extend the fishery included: catch levels of sockeye and pink salmon relative to chinook, the chinook catch relative to the 5,000 chinook catch limit, co-management with Areas 2W, 3, 4, 5 and 6, Skeena stock considerations (sockeye), gear levels, and the number of seasonal fishing days provided to local fishermen.

Preliminary 1984 weekly seine and gillnet commercial catches by species, number of fishing days and gear levels for the Area 1 interception net fishery are presented in Table 2. Hailed net catch estimates and sales slip records showed the following catch breakdown by species:

Species	Hailed catches	Sales slip records
Sockeye	15,186	28,478
Coho	4,867	5,532
Pink	24,057	63,238
Chum	4,637	4,870
Chinook	3,332	4,490
Total	51,176	106,608

Large discrepancies existed between hailed catch and landed catch as reported on sales slips, particularly for pink salmon and the gillnet component of the catch. Hailed catches of pink salmon represented approximately one-third of the sales slip landed pink catch. The gillnet catch component for Area 1 was apparently misrepresented through sales slips which indicated significantly more effort; this resulted in very large discrepancies in catch, particularly for sockeye.

While it is felt that errors are common in hailed catches by virtue of their nature, the problem of misrepresentation of gillnet effort and catch in Area 1 is a fundamental weakness in the DFO catch statistics system. Area of catch is either misreported or interpreted incorrectly in the sales slip process. This is a common problem for seine-caught fish obtained during multiple openings when the highly mobile seine vessels may fish in two or three Statistical Areas within a few days, often reporting the entire catch from the last area fished. But the above discrepency is difficult to explain for the gillnet fleet which tends to be less mobile. Combination gear (troll and


Langara Is
Cohoe Pt.
DIXON ENTRANCE
1
Wiah Pt.
Pillar Bay
1-2
1-7
1-3
1-1
1-4
1-5
1-6
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
Athlow Bay
2E
2W
Rennell Sound
Kano Inlet
Skidegate Inlet
Sandspit
2-1
2-2
2-3
2-4
2-5
2-7
2-8
2-11
2-12
2-14
2-15
2-17
2-18
2-19
2-31
Gray Pt.
Cumshewa Inlet
Kitgoro Pt.
QUEEN CHARLOTTE ISLANDS
MORESBY ISLAND
Tasu Sound
Scudder Pt.
McLean Fraser Pt.
Lyman Pt.
PACIFIC OCEAN
N
0 10 20 30
km

QCI INTERCEPTION FISHERY, 1984			
Stat. Area	Fishing date	Location	M.U.
Area 1	July 15-17	Langara I. - CohoePt. Pillar Bay Virago Sd.	1-2 1-7 1-3
	July 22-23	Langara I. - CohoePt. Pillar Bay Virago Sd.	1-2 1-7 1-3
	July 29-31	Langara I. - CohoePt. Pillar Bay	1-2 1-7
	Aug. 5-6	"	"
	Aug. 12-14	"	"
Area 2W	July 15-17	Kano In.	2-69, 2-70, 2-71
		Rennell Sd. - Conehead tie-off - Boulder Bay tie-off - Boulder Bay - Shields Bay	2-78 2-72 2-74 2-73, 2-75 2-76, 2-77
	July 22-23	"	"
	July 29-31	"	"
	Aug. 5-6	Kano In.	2-69, 2-70, 2-71
		Rennell Sd. (outside)	2-78

Fig. 5. QCI interception fishery in Areas 1 and 2W, 1984: Management Units opened with corresponding fishing times and geographic locations during the July 15 - August 14 fishery.

Table 1. Area 1 interception net fishery: weekly pre-season plans, in-season management and rationale for management, 1984.

Date	Pre-season fishing plans	In-season management	Rationale
July 15/16 17	Open to nets 1 day; ± extension.	Opened 2 days.	-cumulative Skeena sockeye escapement below target according to test fishing index, but on target for week -very low abundance of sockeye indicated by seine tagging vessel (International Tagging Program) at Langara Island -very poor IFF catches with high chinook: sockeye ratio indicated at Langara Island -coordinated fishery along with Areas 2W, 3, 4 and 5 -low effort considerations given July 11 - July 14 UFAWU strike
July 22/23	Open to nets 1 day; ± extension.	Opened 1 day; no extension.	-stock strength of passing sockeye to date relatively poor; fish may be small, deep and not accessible to interception in areas off Langara Island, Noyes Island, and Cape Fox, Alaska to past extent -poor catches exhibited in previous opening -Skeena sockeye test fishing index increasing rapidly as enhanced Pinkut and Fulton runs peak; increased exploitation desired on these enhanced stocks -relatively poor catches hailed -opening not coordinated with Areas 3 and 4 which opened one day earlier than Areas 1 and 2W -closure synchronized with Areas 3 and 4
July 29/30 31	Open to nets 1 day; ± extension.	Opened 1 day; extended 1 day.	-relatively good sockeye catches hailed -low chinook catch to date with respect to 5000 piece quota -coordinated fishery along with Areas 2W, 3, 4 and 5 -low gear levels present
August 5/6	Open to nets 1 day; ± extension.	Opened 1 day.	-low to moderate catch of salmon per set -chinook catch increasing but still below 5000 catch ceiling -coordinated opening with continuation of Area 2W fishery and fisheries in Area 3, 4 and 5 -consideration given to seasonal fishing days provided to local fishermen -low gear levels present
August 12/13 14	Sockeye interception fishery to close.	Opened 1 day; extended 1 day.	-chinook catch to date still below catch ceiling -Yakoun pink salmon interception concerns, given uncertainty in stock size -Skeena pink stock indications very strong; increased exploitation desired -gear allocation conflicts with respect to Area 1 troll catch of pink salmon and opportunities provided to seine fishermen -low to moderate catch of salmon per set -M.U. restricted so as to close Virago Sound (M.U.1-3) in order to minimize the interception of QCI pink salmon (uncertain stock size) and chinook; if an extension is warranted, M.U. 1-7 (Pillar Bay) will close and fishing will continue in M.U. 1-2 (CohoePoint, Langara Island) only. More terminal net fisheries will be held to harvest any surplus QCI pink stocks once stock size determinations can be made. -coordinated opening with Aeas 3, 4 and 5 -consideration given to seasonal fishing days provided to local fishermen

Table 2. Area 1 interception net fishery: daily seine and gillnet hail catches by species, and number of fishing days and gear, 1984 (weekly sales slip catches are noted in parentheses).

Date	No. days fishing	No. gear	HAIL CATCH BY SPECIES				
			Sockeye	Coho	Pink	Chum	Chinook
SEINE							
July 15-16		18-10	1110	284	467	652	291
17	2	8	1196	812	1206	772	184
TFW[a]			2306 (2674)	1096 (750)	1673 (3865)	1424 (1022)	475 (342)
July 22-23	1	21	2139 (3688)	1226 (919)	2175 (8872)	1123 (1317)	750 (679)
July 29-30		11	1652	470	2174	211	177
31	2	5	1450	460	1165	152	207
TFW			3102 (4622)	930 (1275)	3339 (6201)	363 (478)	384 (762)
August 5-6	1	11-10	2739 (4743)	715 (1014)	4766 (15372)	808 (1203)	785 (854)
August 12-13		13	3352	589	10008	680	613
14	2	12	1493	287	2040	183	323
TFW			4845 (4347)	876 (1528)	12048 (28774)	863 (647)	936 (1744)
Total	8	64	15131 (20074)	4843 (5486)	24001 (63084)	4581 (4667)	3330 (4381)
GILLNET							
July 15			(539)		(13)	(1)	(38)
July 22			(465)	(2)	(52)	(28)	(17)
July 29			(2477)	(15)	(43)	(120)	(31)
August 5-6	1	1	28 (4899)	18 (22)	28 (29)	18 (19)	2 (23)
August 12-13	1	1	27 (24)	6 (7)	28 (17)	38 (35)	
Total	2	2	55 (8404)	24 (46)	56 (154)	56 (203)	2 (109)
TOTAL NETS	8	66	15186 (28478)	4867 (5532)	24057 (63238)	4637 (4870)	3332 (4490)

[a] TFW denotes total for week.

gillnet) may be one of the sources of this reporting error. In summary, it is felt that the majority of the sockeye catch reported on sales slips in 1984 as being gillnet-caught in Area 1 should most reasonably be attributed to Areas 4 and 5. Pink salmon, being small in size and of less value, are probably underestimated by fishermen when hailing salmon catches to fishery officers on the grounds.

Salmon catch breakdown by gear type continued to show an increase in the seine portion of the catch which accounted for 98% of the total net catch for this fishery in 1984 (Table 3).

Preliminary 1984 data on seasonal gear levels in Area 1 during the interception net fishery indicated 64 seines and 2 gillnets. This was similar to the 1983 gear levels but below the 1975-1984 mean of 80 seines and 53 gillnets observed for this fishery. While the number of net fishing days was the lowest since 1954, the mean weekly seine effort in 1984 (12 seines) was similar to the previous 10-year average of 10 seines/week.

Assessment of the 1984 interception net fishery, Area 1

A historical review of the development of Area 1 interception net fishery is provided by Orman and Sprout (1984). Assessment of the 1984 interception net fishery in Area 1 in terms of pre-season fishing plans, actual fishing strategies, stock composition, management and fleet control is provided in the following section.

In 1984, the pre-season management objective of limiting the chinook catch to less than 5,000 pieces was maintained in Area 1. The interception net fishery was extended one week (2 fishing days) beyond the pre-season fishing plan partially because of the relatively low chinook catch, sustained good catches of pink salmon, and a need to provide extended fishing opportunity to the few local seiners that were fishing the area.

The stock composition of the 1984 sockeye and pink catch in Area 1 was derived from scale samples (sockeye), parasite analysis (sockeye), tissue samples (sockeye-electrophoretic analysis), and tag recovery results of the International Tagging Program (pink salmon). This program was conducted jointly between Canada and the U.S., and a portion of the Canadian sampling occurred at Langara Island in Area 1 (Fig. 3). Preliminary 1984 results indicated sockeye stock aggregates and proportions as presented in Table 4 (C. Wood, DFO Pacific Biological Station (PBS), pers. comm.). Predominant sockeye stock aggregates in the Langara Island net fishery included: Skeena, QCI and Chilkoot stocks (approximately 50% during mid-July peak), upper Fraser River stocks (approximately 55% at the end of July and beginning of August), Smith Inlet sockeye (approximately 25% during early July), and a mixture of Rivers Inlet, Vancouver Island, North B.C. Coast and S.E. Alaska stocks (approximately 20% throughout mid-July). Stock discrimination methods utilized genetic and parasite characteristics and will be refined at a later date to include scale characteristics.

Pink salmon tagging results in 1984 for Area 1 in general indicated the following stock composition (K. English, LGL Ltd., pers. comm.): 3% QCI (2%

Table 3. Area 1 annual commercial salmon catches by species and gear, 1954-1984[a].

YEAR	SOCKEYE									COHO								
	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	52	41.60	42	33.60	94	75.20	31	24.80	125	10965	5.23	170	0.08	11135	5.31	198497	94.69	209632
1955	0	0.00	4	3.15	4	3.15	123	96.85	127	6516	1.75	49	0.01	6565	1.76	365968	98.24	372533
1956	1297	46.84	1398	50.49	2695	97.33	74	2.67	2769	2216	0.95	8283	3.55	10499	4.50	222569	95.50	233068
1957	0	0.00	421	62.56	421	62.56	252	37.44	673	3036	0.91	5476	1.64	8512	2.55	325914	97.45	334426
1958	1375	20.26	4173	61.48	5548	81.73	1240	18.27	6788	349	0.20	4704	2.68	5053	2.88	170342	97.12	175395
1959	2	0.11	1020	57.53	1022	57.64	751	42.36	1773	0	0.00	1526	1.02	1526	1.02	147935	98.98	149461
1960	196	3.47	5152	91.30	5348	94.77	295	5.23	5643	102	0.08	3169	2.55	3271	2.63	121201	97.37	124472
1961	41	1.42	2583	89.69	2624	91.11	256	8.89	2880	248	0.12	2600	1.30	2848	1.42	197281	98.58	200129
1962	306	1.60	18661	97.45	18967	99.05	182	0.95	19149	1386	0.46	15463	5.12	16849	5.58	285231	94.42	302080
1963	276	4.69	5338	90.80	5614	95.49	265	4.51	5879	2200	0.71	13324	4.28	15524	4.99	295746	95.01	311270
1964	298	2.66	10632	95.00	10930	97.66	262	2.34	11192	6830	1.95	39688	11.34	46518	13.29	303534	86.71	350052
1965	7135	26.94	19005	71.76	26140	98.70	343	1.30	26483	5393	2.24	37320	15.49	42713	17.73	198242	82.27	240955
1966	1740	10.77	14265	88.30	16005	99.07	150	0.93	16155	3532	1.05	41819	12.44	45351	13.49	290716	86.51	336067
1967	1799	5.46	30263	91.81	32062	97.26	902	2.74	32964	1005	0.48	36489	17.60	37494	18.08	169873	81.92	207367
1968	1948	3.83	48324	94.97	50272	98.80	610	1.20	50882	1416	0.38	88621	24.03	90037	24.41	278811	75.59	368848
1969	3784	8.34	40639	89.52	44423	97.86	972	2.14	45395	541	0.22	39952	16.11	40493	16.32	207576	83.68	248069
1970	1288	2.20	56462	96.55	57750	98.76	727	1.24	58477	1290	0.46	70182	25.01	71472	25.47	209191	74.53	280663
1971	7308	12.84	48481	85.17	55789	98.01	1135	1.99	56924	2386	1.02	52306	22.39	54692	23.41	178913	76.59	233605
1972	14045	21.04	51993	77.90	66038	98.95	702	1.05	66740	7731	2.84	54025	19.86	61756	22.71	210223	77.29	271979
1973	14770	46.85	16290	51.68	31060	98.53	463	1.47	31523	917	0.66	7466	5.37	8383	6.03	130672	93.97	139055
1974	5015	19.43	11398	44.15	16413	63.58	9403	36.42	25816	1491	0.89	9836	5.88	11327	6.77	156066	93.23	167393
1975	9756	28.11	16844	48.54	26600	76.65	8103	23.35	34703	3392	2.65	15697	12.25	19089	14.90	109051	85.10	128140
1976	5418	38.74	7417	53.03	12835	91.77	1151	8.23	13986	1400	2.09	2687	4.01	4087	6.09	62974	93.91	67061
1977	13294	34.41	23238	60.14	36532	94.55	2107	5.45	38639	2451	2.46	1148	1.15	3599	3.61	96031	96.39	99630
1978	4797	73.91	894	13.78	5691	87.69	799	12.31	6490	2751	1.03	403	0.15	3154	1.18	264158	98.82	267312
1979	65288	87.85	4220	5.68	69508	93.52	4813	6.48	74321	15181	5.31	1164	0.41	16345	5.72	269487	94.28	285832
1980	46027	59.16	27026	34.74	73053	93.89	4751	6.11	77804	11422	3.71	16152	5.25	27574	8.97	279946	91.03	307520
1981	177831	77.75	42065	18.39	219896	96.14	8837	3.86	228733	10869	5.07	5953	2.78	16822	7.85	197574	92.15	214396
1982	58665	92.67	800	1.26	59465	93.93	3840	6.07	63305	9870	6.33	90	0.06	9960	6.38	146075	93.62	156035
1983	31315	86.09	1113	3.06	32428	89.15	3947	10.85	36375	4762	1.32	640	0.18	5402	1.50	355746	98.50	361148
1984	21675	43.69	10034	20.23	31709	63.92	17900	36.08	49609	7231	2.11	221	0.06	7452	2.18	334648	97.82	342100
AVERAGE 1954-63	335	12	3879	64	4234	76	347	24	4581	2702	1	5476	2	8178	3	233068	97	241247
1964-73	5412	14	33635	84	39047	98	627	2	39674	3104	1	46787	17	49891	18	217775	82	267666
1974-84	39916	58	13186	28	53103	86	5968	14	59071	6438	3	4908	3	11346	6	206523	94	217870

Table 3 (cont'd).

		PINK									CHUM								
YEAR		SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954		149336	95.77	1028	0.66	150364	96.43	5574	3.57	155938	31108	91.66	2266	6.68	33374	98.33	566	1.67	33940
1955		0	0.00	22	0.13	22	0.13	16708	99.87	16730	5175	86.41	17	0.28	5192	86.69	797	13.31	5989
1956		109181	66.67	37677	23.01	146858	89.68	16908	10.32	163766	12899	70.81	4527	24.85	17426	95.66	790	4.34	18216
1957		0	0.00	2901	11.48	2901	11.48	22367	88.52	25268	51060	89.23	5481	9.58	56541	98.80	684	1.20	57225
1958		475012	79.63	75680	12.69	550692	92.32	45843	7.68	596535	3459	35.55	5423	55.73	8882	91.28	848	8.72	9730
1959		923	3.86	715	2.99	1638	6.85	22274	93.15	23912	1777	79.29	168	7.50	1945	86.79	296	13.21	2241
1960		18198	35.84	21913	43.16	40111	79.00	10660	21.00	50771	105	4.95	1757	82.80	1862	87.75	260	12.25	2122
1961		3981	15.13	1753	6.66	5734	21.79	20578	78.21	26312	217	19.51	603	54.23	820	73.74	292	26.26	1112
1962		54347	25.20	65094	30.18	119441	55.38	96248	44.62	215689	230	6.97	2754	83.43	2984	90.40	317	9.60	3301
1963		61	0.09	25503	35.90	25564	35.99	45473	64.01	71037	108	2.10	4078	79.31	4186	81.41	956	18.59	5142
1964		200470	68.55	29577	10.11	230047	78.67	62376	21.33	292423	7565	51.92	6050	41.52	13615	93.45	955	6.55	14570
1965		38951	51.27	11105	14.62	50056	65.88	25919	34.12	75975	2267	20.20	7750	69.04	10017	89.24	1208	10.76	11225
1966		1025061	76.69	261967	19.60	1287028	96.29	49523	3.71	1336551	9324	42.99	11848	54.63	21172	97.63	515	2.37	21687
1967		3758	4.31	44213	50.70	47971	55.01	39232	44.99	87203	4158	16.56	20108	80.09	24266	96.65	841	3.35	25107
1968		722456	77.11	103682	11.07	826138	88.18	110719	11.82	936857	941	3.76	23439	93.62	24380	97.38	656	2.62	25036
1969		1452	2.98	15344	31.44	16796	34.42	32003	65.58	48799	2277	6.24	33848	92.79	36125	99.03	353	0.97	36478
1970		134488	40.49	123154	37.08	257642	77.57	74485	22.43	332127	4062	12.11	28768	85.76	32830	97.87	714	2.13	33544
1971		7855	7.88	42025	42.16	49880	50.04	49809	49.96	99689	6140	16.57	30281	81.73	36421	98.30	629	1.70	37050
1972		154319	48.78	37445	11.84	191764	60.61	124622	39.39	316386	8000	15.66	41324	80.89	49324	96.55	1762	3.45	51086
1973		15425	29.25	5925	11.24	21350	40.49	31380	59.51	52730	30769	56.62	22681	41.74	53450	98.36	891	1.64	54341
1974		69304	57.13	7509	6.19	76813	63.32	44504	36.68	121317	5042	24.59	14578	71.10	19620	95.69	884	4.31	20504
1975		16646	26.10	23276	36.49	39922	62.59	23862	37.41	63784	3282	27.13	8073	66.74	11355	93.87	741	6.13	12096
1976		3862	59.72	1482	22.92	5344	82.63	1123	17.37	6467	1089	39.43	1476	53.44	2565	92.87	197	7.13	2762
1977		37595	34.27	5048	4.60	42643	38.87	67063	61.13	109706	3439	55.69	1732	28.05	5171	83.74	1004	16.26	6175
1978		17680	23.48	167	0.22	17847	23.70	57445	76.30	75292	3980	45.09	1943	22.01	5923	67.10	2904	32.90	8827
1979		126096	52.53	1189	0.50	127285	53.02	112766	46.98	240051	5332	59.94	852	9.58	6184	69.51	2712	30.49	8896
1980		98261	11.88	7475	0.90	105736	12.78	721646	87.22	827382	8020	40.51	2622	13.24	10642	53.75	9158	46.25	19800
1981		263961	48.69	14131	2.61	278092	51.29	264065	48.71	542157	10296	48.79	6386	30.26	16682	79.05	4421	20.95	21103
1982		18036	24.21	107	0.14	18143	24.36	56340	75.64	74483	12195	82.53	256	1.73	12451	84.26	2326	15.74	14777
1983		133421	40.70	564	0.17	133985	40.88	193807	59.12	327792	2275	28.58	360	4.52	2635	33.11	5324	66.89	7959
1984		678003	36.48	2990	0.16	680993	36.64	1177577	63.36	1858570	6002	10.57	275	0.48	6277	11.05	50532	88.95	56809
AVERAGE	1954-63	81104	32	23229	17	104333	49	30263	51	134596	10614	49	2707	40	13321	89	581	11	13902
	1964-73	230424	41	67444	24	297867	65	60007	35	357874	7550	24	22610	72	30160	96	852	4	31012
	1974-84	132988	38	5813	7	138800	45	247291	55	386091	5541	42	3505	27	9046	69	7291	31	16337

Table 3 (cont'd).

		CHINOOK										TOTAL SALMON									
YEAR	:	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	:	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	:
1954	:	3	0.01	146	0.53	149	0.54	27310	99.46	27459	:	191464	44.83	3652	0.86	195116	45.68	231978	54.32	427094	:
1955	:	0	0.00	2	0.01	2	0.01	21779	99.99	21781	:	11691	2.80	94	0.02	11785	2.83	405375	97.17	417160	:
1956	:	3	0.02	46	0.24	49	0.26	18827	99.74	18876	:	125596	28.76	51931	11.89	177527	40.65	259168	59.35	436695	:
1957	:	0	0.00	52	0.27	52	0.27	19482	99.73	19534	:	54096	12.38	14331	3.28	68427	15.65	368699	84.35	437126	:
1958	:	60	0.19	161	0.51	221	0.69	31591	99.31	31812	:	480255	58.55	90141	10.99	570396	69.54	249864	30.46	820260	:
1959	:	0	0.00	41	0.13	41	0.13	31948	99.87	31989	:	2702	1.29	3470	1.66	6172	2.95	203204	97.05	209376	:
1960	:	18	0.08	119	0.50	137	0.57	23803	99.43	23940	:	18619	9.00	32110	15.52	50729	24.51	156219	75.49	206948	:
1961	:	1	0.00	39	0.11	40	0.11	35216	99.89	35256	:	4488	1.69	7578	2.85	12066	4.54	253623	95.46	265689	:
1962	:	65	0.37	169	0.97	234	1.34	17230	98.66	17464	:	56334	10.10	102141	18.32	158475	28.42	399208	71.58	557683	:
1963	:	5	0.02	165	0.78	170	0.81	20920	99.19	21090	:	2650	0.64	48408	11.68	51058	12.32	363360	87.68	414418	:
1964	:	26	0.06	529	1.15	555	1.21	45374	98.79	45929	:	215189	30.13	86476	12.11	301665	42.24	412501	57.76	714166	:
1965	:	1879	4.39	528	1.23	2407	5.62	40400	94.38	42807	:	55625	14.00	75708	19.05	131333	33.04	266112	66.96	397445	:
1966	:	237	0.40	717	1.21	954	1.61	58180	98.39	59134	:	1039894	58.76	330616	18.68	1370510	77.45	399084	22.55	1769594	:
1967	:	217	0.41	1509	2.82	1726	3.23	51731	96.77	53457	:	10937	2.69	132582	32.65	143519	35.34	262579	64.66	406098	:
1968	:	611	1.06	1898	3.30	2509	4.36	55010	95.64	57519	:	727372	50.54	265964	18.48	993336	69.02	445806	30.98	1439142	:
1969	:	698	1.24	1969	3.51	2667	4.75	53450	95.25	56117	:	8752	2.01	131752	30.30	140504	32.31	294354	67.69	434858	:
1970	:	222	0.28	2737	3.48	2959	3.77	75582	96.23	78541	:	141350	18.04	281303	35.91	422653	53.95	360699	46.05	783352	:
1971	:	794	1.10	2156	2.98	2950	4.07	69505	95.93	72455	:	24483	4.90	175249	35.07	199732	39.97	299991	60.03	499723	:
1972	:	857	1.42	1297	2.14	2154	3.56	58396	96.44	60550	:	184952	24.12	186084	24.27	371036	48.39	395705	51.61	766741	:
1973	:	270	0.49	372	0.67	642	1.15	55007	98.85	55649	:	62151	18.65	52734	15.82	114885	34.47	218413	65.53	333298	:
1974	:	4337	5.63	800	1.04	5137	6.67	71861	93.33	76998	:	85189	20.68	44121	10.71	129310	31.38	282718	68.62	412028	:
1975	:	4383	4.27	2730	2.66	7113	6.93	95476	93.07	102589	:	37459	10.98	66620	19.52	104079	30.49	237233	69.51	341312	:
1976	:	1480	2.78	519	0.97	1999	3.75	51265	96.25	53264	:	13249	9.23	13581	9.46	26830	18.69	116710	81.31	143540	:
1977	:	4611	8.66	700	1.31	5311	9.97	47952	90.03	53263	:	61390	19.97	31866	10.37	93256	30.34	214157	69.66	307413	:
1978	:	2187	2.97	77	0.10	2264	3.08	71322	96.92	73586	:	31395	7.28	3484	0.81	34879	8.08	396628	91.92	431507	:
1979	:	6475	9.98	280	0.43	6755	10.41	58134	89.59	64889	:	218372	32.40	7705	1.14	226077	33.54	447912	66.46	673989	:
1980	:	6014	8.05	754	1.01	6768	9.06	67934	90.94	74702	:	169744	12.99	54029	4.13	223773	17.12	1083435	82.88	1307208	:
1981	:	13356	15.86	748	0.89	14104	16.75	70100	83.25	84204	:	476313	43.67	69283	6.35	545596	50.03	544997	49.97	1090593	:
1982	:	9329	7.87	20	0.02	9349	7.88	109247	92.12	118596	:	108095	25.30	1273	0.30	109368	25.60	317828	74.40	427196	:
1983	:	2429	2.44	27	0.03	2456	2.47	96913	97.53	99369	:	174202	20.92	2704	0.32	176906	21.25	655737	78.75	832643	:
1984	:	4580	3.73	391	0.32	4971	4.05	117905	95.95	122876	:	717491	29.53	13911	0.57	731402	30.10	1698562	69.90	2429964	:
AVERAGE	1954-63	16	0	94	0	110	0	24811	100	24920		94790	17	35386	8	130175	25	289070	75	419245	
	1964-73	581	1	1371	2	1952	3	56264	97	58216		247071	22	171847	24	418917	47	335524	53	754442	
	1974-84	5380	7	641	1	6021	7	78010	93	84031		190264	21	28052	6	218316	27	545083	73	763399	

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[a] From B.C. Catch Statistics.

Table 4. Preliminary 1984 sockeye stock aggregates comprising the Langara Island net fishery, Area 1, 1984 (C. Wood, DFO (PBS), pers. comm.).

Sockeye stock mixture	95% C.I.	Langara Island catch proportion (%)		
		July 8-14	July 8-21	July 29-Aug. 4
I. Skeena, QCI, Chilkoot	±15%	36.5	51.5	30.1
II. Smith Inlet	±12%	26.9	20.6	10.5
III. Upper Fraser	±16%	0.1	1.1	56.1
IV. Rivers Inlet, N. B.C. Coast, Vancouver Is., S.E. Alaska	±13%	18.3	21.1	1.3
V. Lower Fraser, Great Central	±13%	11.9	0.2	0.1
VI. Meziadin	±13%	1.5	0.8	1.8

Yakoun, 1% Area 2E stocks), 4% Kwinamass, 15% Skeena, 1% Area 3 (outside Dundas Island stocks), 2% Area 3 (inside), 1% Area 5, 2.5% Area 6 and 74% S.E. Alaskan stocks. Area 1 tagging was primarily conducted in the Cape Chacon area of northern Dixon Entrance (Fig. 1) where approximately 60% of the tags were applied. The Canadian contribution to stocks might be estimated at 20%-35% greater in the southern Dixon Entrance area where the interception net fishery occurred.

With regard to the weekly fishing strategies (Table 1), the July 15-17 opening should have opened for 1 day only, rather than the announced 2 days, on the grounds of the low Skeena sockeye stock indication to date (Tyee test fishery), the very poor sockeye catches indicated by the seine tagging vessel (International Tagging Program), and the poor Indian Food Fishery catches at Langara Island which indicated a high chinook:sockeye ratio. In addition, pre-season fishing plans noted 1-day openings with the possibility of an extension depending on stock considerations, catch and species mix, and gear distribution concerns.

In the case of the July 22-23 opening, the fishery should have been coordinated with fisheries in Areas 3 and 4 which opened 1 day earlier, in order to optimize fleet distribution. These slight inconsistencies in management produced minor effects on the resulting catch and were therefore probably inconsequential in retrospect.

The relatively low sockeye interception catch in Area 1 in 1984 cannot be attributed to any lingering effects of the warm El Nino waters of 1983 (L. Giovando, Institute of Ocean Sciences, pers. comm.) and their potential effect on fish distribution and local abundance, nor can it be attributed to the stock size of Skeena River sockeye which was above average and estimated at 2.4 million (L. Jantz, DFO, pers. comm.). Other oceanographic factors affecting catchability such as wind prevalence or salinity gradient may have interacted with fish distribution and local abundance, although these processes are largely undefined. Mysak et al. (1982) have recently developed a model which relates several oceanographic parameters to fish distribution and abundance; this and similar models may become useful tools for fisheries management and may, in the future, help to explain some of the anomolous catch patterns in fisheries such as the Langara Island interception net fishery.

The moderately high pink interception catch in Area 1 in 1984 can be attributed to exceptional returns of pink salmon to the northern Queen Charlotte Islands (Yakoun River - estimated stock size 2.4 million pink salmon), Skeena River (estimated stock size 2.9 million pink salmon; L. Jantz, DFO, pers. comm.), and southern S.E. Alaska (estimated stock size 29 million pink salmon; J. Valentine, Alaska Department of Fish and Game, pers. comm.).

In terms of stock management, the 1984 Area 1 interception net fishery exploited less than an estimated 1% of the Skeena River sockeye stock and an extremely small Fraser River sockeye stock component. Similarly, the exploitation rate exerted on pink salmon was minor relative to the large harvestable surpluses experienced by the Yakoun, Skeena, Nass and S.E. Alaskan stocks. In general, no conservation problems were experienced as a result of this fishery in 1984.

Fleet management in Area 1 coincided with that of one or more of Areas 2W, 3, 4 and 5, thus maintaining a moderate balance of gear spread across the North Coast salmon fishing areas. The low gear levels exhibited in Area 1 in 1984 were a consequence of the relatively poor passing stock abundance of sockeye in the area.

AREA 2W

1984 Pre-season fishing pattern

The 1984 salmon expectations and proposed net fishing pattern for Area 2W are presented in Appendix 3. While the overall abundance forecast was estimated to be below optimum, small surpluses were anticipated for pink and chum salmon in isolated inlets. An interception net fishery targeting on passing sockeye and pink salmon was scheduled to occur 2 days per week in the Rennell Sound area (Fig. 4) during the last 2 weeks of July and the first week of August. Due to coastwide concerns for declining chinook stocks, a catch limit of 5,000 chinook was applied to Area 2W for the third year in a row. As in Area 1, this catch limit would permit fisheries to continue to harvest target species while minimizing the incidental chinook catch. In the past, chinook catches had been increasing in this area and thus the catch limit was designed to discourage vessels from fishing at sites of high chinook concentration.

1984 Weekly fishing summary, Area 2W

In Area 2W, 6 days of salmon fishing were expended in 1984 during the Rennell Sound interception net fishery (Fig. 5, Table 5). The fishery commenced on July 15 with a 2-day opening and continued at 1 or 2 days per week for 3 more weeks, ending on August 6. Table 5 reviews the Area 2W fishing season in terms of weekly pre-season fishing plans, in-season management actions and the rationale for that management. Factors involved in deciding whether to open or extend the fishery included: catch levels of sockeye and pink salmon relative to chinook, the chinook catch relative to the 5,000 chinook catch ceiling, Fraser River stock considerations (sockeye and pink salmon), co-management with Areas 1, 3, 4 and 6, international policy, gear levels, fishing conditions, and the number of seasonal fishing days provided to local fishermen.

Preliminary 1984 weekly seine commercial catches by species, number of fishing days and gear levels for the Rennell Sound interception fishery are presented in Table 6. Hailed net catch estimates and sales slip records showed the following catch breakdown by species:

Species	Hailed catches	Sales slip records
Sockeye	100,660	82,544
Coho	5,061	6,111
Pink	78,156	119,888
Chum	10,911	9,569
Chinook	4,720	8,064
Total	199,508	226,176

Table 5. Area 2W interception net fishery: weekly pre-season plans, in-season management and rationale for management, 1984.

Date	Pre-season fishing plans	In-season management	Rationale for management
July 15/16 17	Open to nets 2 days.	Opened 2 days.	-very poor catches hailed (5-10 salmon/set) -seines distributed mainly at Boulder Bay where the hail catch of chinook exceeded that of sockeye by nearly 4:1, in contrast to management guidelines of a 10:1 sockeye to chinook catch ratio -opened along with fisheries in Areas 1, 3, 4 and 5
July 22/23	Open to nets 2 days.	Opened 1 day; no extension.	-low effort considerations as a result of the UFAWA strike July 11-14 -very poor catches indicated from previous weeks' fishing -poor catches hailed, with the prominent species being chinook salmon; a chinook to sockeye ratio of 10:1 was estimated early in the fishery -coordinated opening with Area 1, 1 day later than openings in Areas 3 and 4; closed concurrently with Areas 3 and 4 -low gear levels present
July 29/30 31	Open to nets 2 days.	Opened 1 day; extended 1 day.	-no Fraser River sockeye stock concerns at this time; the timing and scale analysis of stocks passing the Rennell Sound fishery indicated a a prominence of Chilco River sockeye (note: post-season assessment indicated a 97% Fraser sockeye component in the catch, of which 82% were discriminated to be of Chilco River origin) -high sockeye and pink catches hailed -5000 chinook catch ceiling not exceeded prior to fishery -coordinated opening along with fisheries in Areas 1, 3, 4 and 5 -moderately high gear evenly distributed
August 5/6	Sockeye interception fishery to close.	Opened 1 day.	-5000 chinook catch ceiling exceeded during previous week's fishery (J. Thomas, MRP, pers. comm.) -high sockeye and pink salmon abundance indicated from previous week's fishery -Fraser River sockeye stock concerns for Birkenhead run; no conservation concerns for Chilco River sockeye -August 3, 4 test fishery indicated an abundance of sockeye and pink salmon in excess of the 10:1 sockeye to chinook management guideline and provided scale and tissue samples for post-season stock identification -Boulder Bay and Conehead tie-off could be closed to minimize the chinook bicatch, leaving Kano Inlet and outer Rennell Sound only open (M.U. 2-78, 2-69, 2-71 and 2-70) -international considerations -consideration given to seasonal fishing opportunities provided to nets in the North Coast

Table 6. Area 2W interception net fishery in Rennell Sound: daily seine hail catches by species, and number of fishing days and gear, 1984 (weekly sales slip catches are noted in parentheses).

Date	No. days fishing	No. gear	HAIL CATCH BY SPECIES									
			Sockeye		Coho		Pink		Chum		Chinook	
SEINE												
July 15-16		8-9	172		222		88		313		641	
17	2	10	363		270		67		193		212	
TFW[a]			535	(4495)	492	(834)	155	(8716)	506	(2447)	853	(1590)
July 22-23	1	5-6	88	(3850)	94	(439)	202	(10672)	348	(2275)	419	(705)
July 29-30		31-33	51112		2963		33050		8395		2322	
31	2	33	21233		830		11137		857		535	
TFW			72345	(53228)	3793	(3316)	44187	(63143)	9252	(3069)	2857	(4647)
August 5-6	1	23-24	27692	(20971)	682	(1522)	33612	(37357)	805	(1778)	591	(1122)
Total	6	71	100660	(82544)	5061	(6111)	78156	(119888)	10911	(9569)	4720	(8064)

[a] TFW denotes total for week.

According to sales slips, the catch of both chinook and pink salmon was significantly underestimated on the fishing grounds by 41% and 35% respectively, while the sockeye catch was overestimated by 22%. The above discrepancy in chinook catch poses a serious management problem in holding the chinook catch ceiling of 5,000 pieces, which was exceeded by 61%. Also, it appeared that 1 out of 4 pink salmon was hailed as a sockeye salmon, perhaps accounting for the underestimation of pink salmon and overestimation of sockeye. The 1984 seine catch of around 83,000 sockeye was the third highest in over 30 years of catch records for the area and surpassed the previous 10-year average by nearly 50% (Table 7). The 1984 catch of passing pink salmon in Rennell Sound was approximately equal to the 1974-84 even year catch average of around 110,000 pink salmon (Table 7). Catches of other salmon species showed no significant changes relative to the previous 10-year average (Table 7).

Salmon catch breakdown by gear continued to show an increase in the seine component of the catch which accounted for 100% of the interception net fishery in Rennell Sound in 1984 (Table 6). For the second consecutive year, no gillnet effort was expended in this fishery.

Preliminary 1984 data on seasonal gear levels in Area 2W during the interception net fishery indicated 71 seines and 0 gillnets. This total was approximately 20% below the 1983 gear levels for this fishery but similar to gear levels observed for this fishery during the past five or six years. Peak catches of sockeye and pink salmon in the Rennell Sound area during late July and early August in 1983 accounted for the increase that year in gear in the area (Orman and Sprout 1984). In 1984, the 6 net fishing days expended on the Rennell Sound fishery were among the lowest on record since the start of this fishery in 1974.

Assessment of the 1984 interception net fishery, Area 2W

A historical review of the development of the Rennell Sound interception net fishery is provided by Orman and Sprout (1984). Assessment of the 1984 interception net fishery in Area 2W in terms of pre-season fishing plans, actual fishing strategies, stock composition, management and fleet control is provided in the following section.

In 1984, the pre-season management objective of limiting the chinook catch to less than 5,000 pieces was not maintained. The Rennell Sound fishery exceeded this catch ceiling by 61%, despite catch sampling information provided by the Mark Recovery Program (MRP) in the third week of the fishery which indicated that the catch limit had already been exceeded and that previous hail catches likely underestimated the true catch (J. Thomas, MRP, pers. comm.) (Appendix 4). As anticipated, final sales slip records indicated that the Area 2W seine chinook catch ceiling had been exceeded by the end of the third week of fishing. Indeed, nearly 70% of the catch limit had been taken in the July 29-31 2-day opening which also harvested peak numbers of sockeye and pink salmon. This demonstrates the uncertainty in managing this fishery: it is difficult to predict when the 2 or 3 peak weeks of sockeye and pink salmon abundance will occur in the mid-July to early August time period. As it turned out, the Rennell Sound interception fishery opened a week too early and should probably have only opened on speculation for one day when it did, rather than two. This

Table 7. Area 2W annual commercial salmon catches by species and gear, 1954-1984 [a].

	SOCKEYE									COHO								
YEAR	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	40	100.00	0	0.00	40	100.00	0	0.00	40	14710	91.50	38	0.24	14748	91.74	1328	8.26	16076
1955	4381	100.00	0	0.00	4381	100.00	0	0.00	4381	3363	69.28	125	2.58	3488	71.86	1366	28.14	4854
1956	322	56.99	243	43.01	565	100.00	0	0.00	565	3451	61.10	1	0.02	3452	61.12	2196	38.88	5648
1957	5178	79.83	1305	20.12	6483	99.95	3	0.05	6486	806	17.76	0	0.00	806	17.76	3732	82.24	4538
1958	0	0.00	2973	99.97	2973	99.97	1	0.03	2974	118	7.46	248	15.69	366	23.15	1215	76.85	1581
1959	80	9.63	751	90.37	831	100.00	0	0.00	831	0	0.00	20	0.88	20	0.88	2265	99.12	2285
1960	427	20.44	1661	79.51	2088	99.95	1	0.05	2089	166	5.90	0	0.00	166	5.90	2646	94.10	2812
1961	0	0.00	1026	100.00	1026	100.00	0	0.00	1026	68	2.07	25	0.76	93	2.83	3190	97.17	3283
1962	1835	40.14	2729	59.69	4564	99.83	8	0.17	4572	0	0.00	118	0.50	118	0.50	23396	99.50	23514
1963	0	0.00	3203	99.78	3203	99.78	7	0.22	3210	0	0.00	0	0.00	0	0.00	17371	100.00	17371
1964	1	0.09	1071	99.17	1072	99.26	8	0.74	1080	3532	15.70	249	1.11	3781	16.81	18711	83.19	22492
1965	0	0.00	517	98.48	517	98.48	8	1.52	525	3242	22.84	1073	7.56	4315	30.40	9878	69.60	14193
1966	4	0.78	2032	99.61	2036	99.80	4	0.20	2040	4338	19.42	630	2.82	4968	22.24	17372	77.76	22340
1967	1	0.19	508	97.32	509	97.51	13	2.49	522	1873	13.27	241	1.69	2134	14.96	12131	85.04	14265
1968	1408	72.58	527	27.16	1935	99.74	5	0.26	1940	1502	12.08	786	6.32	2288	18.40	10145	81.60	12433
1969	25	1.92	1258	96.69	1283	98.62	18	1.38	1301	950	9.08	180	1.72	1130	10.80	9333	89.20	10463
1970	38	8.78	270	62.36	308	71.13	125	28.87	433	10024	49.74	644	3.20	10668	52.93	9486	47.07	20154
1971	161	6.81	2171	91.84	2332	98.65	32	1.35	2364	3096	23.45	107	0.81	3203	24.26	10002	75.74	13205
1972	348	7.45	4221	90.37	4569	97.82	102	2.18	4671	3162	21.20	963	6.46	4125	27.66	10787	72.34	14912
1973	2	0.10	2027	99.46	2029	99.56	9	0.44	2038	810	15.38	267	5.07	1077	20.44	4191	79.56	5268
1974	22227	81.43	1001	3.67	23228	85.09	4069	14.91	27297	1441	11.47	505	4.02	1946	15.50	10612	84.50	12558
1975	5991	87.60	834	12.19	6825	99.80	14	0.20	6839	2738	32.39	1803	21.33	4541	53.73	3911	46.27	8452
1976	4543	87.33	632	12.15	5175	99.48	27	0.52	5202	4281	26.98	343	2.16	4624	29.14	11244	70.86	15868
1977	42990	99.17	275	0.63	43265	99.80	86	0.20	43351	3886	42.87	327	3.61	4213	46.48	4852	53.52	9065
1978	11358	86.81	1584	12.11	12942	98.92	141	1.08	13083	6437	16.31	72	0.18	6509	16.49	32956	83.51	39465
1979	179690	99.29	1001	0.55	180691	99.84	289	0.16	180980	25214	48.87	177	0.34	25391	49.22	26199	50.78	51590
1980	25608	88.80	2459	8.53	28067	97.33	771	2.67	28838	15804	19.44	831	1.02	16635	20.46	64664	79.54	81299
1981	56224	96.35	580	0.99	56804	97.34	1550	2.66	58354	7430	12.45	257	0.43	7687	12.88	52001	87.12	59688
1982	9409	56.09	660	3.93	10069	60.02	6707	39.98	16776	3856	9.48	186	0.46	4042	9.93	36645	90.07	40687
1983	200592	99.79	5	0.00	200597	99.80	408	0.20	201005	4578	15.70	15	0.05	4593	15.75	24572	84.25	29165
1984	82545	98.71	109	0.13	82654	98.84	968	1.16	83622	7467	19.37	58	0.15	7525	19.52	31017	80.48	38547
AVERAGE 1954-63	1226	41	1389	59	2615	100	2	0	2617	2268	26	58	2	2326	28	5871	72	8196
1964-73	199	10	1460	86	1659	96	32	4	1691	3255	20	514	4	3769	24	11204	76	14973
1974-84	58289	89	831	5	59120	94	1344	6	60486	7557	22	416	3	7973	26	27152	74	35125

Table 7 (cont'd).

YEAR	PINK									CHUM								
	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	1036538	100.00	31	0.00	1036569	100.00	11	0.00	1036580	202758	99.26	1504	0.74	204262	100.00	0	0.00	204262
1955	7	9.72	2	2.78	9	12.50	63	87.50	72	20349	95.80	890	4.19	21239	99.99	2	0.01	21241
1956	83983	99.97	0	0.00	83983	99.97	28	0.03	84011	82931	99.83	144	0.17	83075	100.00	1	0.00	83076
1957	2487	98.85	0	0.00	2487	98.85	29	1.15	2516	7166	100.00	0	0.00	7166	100.00	0	0.00	7166
1958	181021	96.84	5575	2.98	186596	99.82	329	0.18	186925	3951	47.73	4323	52.22	8274	99.95	4	0.05	8278
1959	0	0.00	2	3.64	2	3.64	53	96.36	55	12799	87.66	1802	12.34	14601	100.00	0	0.00	14601
1960	164705	99.89	120	0.07	164825	99.96	61	0.04	164886	1243	100.00	0	0.00	1243	100.00	0	0.00	1243
1961	0	0.00	0	0.00	0	0.00	34	100.00	34	3117	92.88	235	7.00	3352	99.88	4	0.12	3356
1962	0	0.00	61	1.09	61	1.09	5561	98.91	5622	0	0.00	1364	99.42	1364	99.42	8	0.58	1372
1963	0	0.00	0	0.00	0	0.00	1557	100.00	1557	0	0.00	1	0.81	1	0.81	123	99.19	124
1964	1369	45.68	30	1.00	1399	46.68	1598	53.32	2997	184532	86.73	28191	13.25	212723	99.98	48	0.02	212771
1965	6	0.60	4	0.40	10	1.00	993	99.00	1003	72793	78.40	19951	21.49	92744	99.88	109	0.12	92853
1966	198771	99.19	5	0.00	198776	99.19	1628	0.81	200404	51435	91.02	5005	8.86	56440	99.88	69	0.12	56509
1967	11449	83.74	53	0.39	11502	84.13	2170	15.87	13672	27531	69.36	12133	30.57	39664	99.92	31	0.08	39695
1968	226799	98.68	348	0.15	227147	98.84	2677	1.16	229824	52030	79.32	13545	20.65	65575	99.98	16	0.02	65591
1969	116	8.74	19	1.43	135	10.17	1192	89.83	1327	63778	88.73	8085	11.25	71863	99.98	14	0.02	71877
1970	314181	98.32	2423	0.76	316604	99.08	2947	0.92	319551	167749	87.36	24190	12.60	191939	99.96	71	0.04	192010
1971	14	0.84	14	0.84	28	1.67	1647	98.33	1675	79030	96.11	3124	3.80	82154	99.91	72	0.09	82226
1972	642901	98.42	7817	1.20	650718	99.62	2474	0.38	653192	102810	84.37	18767	15.40	121577	99.77	280	0.23	121857
1973	3	0.37	1	0.12	4	0.49	814	99.51	818	54425	83.69	10527	16.19	64952	99.88	80	0.12	65032
1974	210783	99.22	429	0.20	211212	99.42	1232	0.58	212444	45108	67.70	21103	31.67	66211	99.37	418	0.63	66629
1975	14099	86.76	131	0.81	14230	87.57	2020	12.43	16250	28191	66.34	14294	33.64	42485	99.98	9	0.02	42494
1976	12118	95.31	337	2.65	12455	97.96	259	2.04	12714	2479	86.23	372	12.94	2851	99.17	24	0.83	2875
1977	52170	96.67	703	1.30	52873	97.98	1092	2.02	53965	10481	55.36	8234	43.49	18715	98.86	216	1.14	18931
1978	222863	97.20	1176	0.51	224039	97.71	5245	2.29	229284	10430	89.78	506	4.36	10936	94.14	681	5.86	11617
1979	178860	90.98	976	0.50	179836	91.48	16746	8.52	196582	10196	86.25	536	4.53	10732	90.78	1090	9.22	11822
1980	77195	63.99	2138	1.77	79333	65.76	41307	34.24	120640	36082	64.69	18013	32.29	54095	96.98	1685	3.02	55780
1981	57545	47.11	483	0.40	58028	47.50	64124	52.50	122152	5670	75.68	428	5.71	6098	81.39	1394	18.61	7492
1982	15422	66.92	213	0.92	15635	67.85	7409	32.15	23044	49098	95.38	1233	2.40	50331	97.78	1144	2.22	51475
1983	287776	96.21	258	0.09	288034	96.29	11085	3.71	299119	6391	92.49	34	0.49	6425	92.98	485	7.02	6910
1984	120380	82.83	0	0.00	120380	82.83	24951	17.17	145331	95698	96.02	1859	1.87	97557	97.88	2108	2.12	99665
AVERAGE 1954-63	146874	51	579	1	147453	52	773	48	148226	33431	72	1026	18	34458	90	14	10	34472
1964-73	139561	53	1071	1	140632	54	1814	46	142446	85611	85	14352	15	99963	100	79	0	100042
1974-84	113565	84	622	1	114187	85	15952	15	130139	27257	80	6056	16	33312	95	841	5	34154

Table 7 (cont'd).

	CHINOOK									TOTAL SALMON								
YEAR	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	8	0.28	0	0.00	8	0.28	2876	99.72	2884	1254054	99.54	1573	0.12	1255627	99.67	4215	0.33	1259842
1955	0	0.00	0	0.00	0	0.00	3071	100.00	3071	28100	83.58	1017	3.03	29117	86.61	4502	13.39	33619
1956	1	0.02	0	0.00	1	0.02	5304	99.98	5305	170688	95.57	388	0.22	171076	95.78	7529	4.22	178605
1957	0	0.00	0	0.00	0	0.00	3713	100.00	3713	15637	64.04	1305	5.34	16942	69.38	7477	30.62	24419
1958	0	0.00	4	0.21	4	0.21	1896	99.79	1900	185090	91.78	13123	6.51	198213	98.29	3445	1.71	201658
1959	0	0.00	1	0.04	1	0.04	2311	99.96	2312	12879	64.13	2576	12.83	15455	76.95	4629	23.05	20084
1960	5	0.28	0	0.00	5	0.28	1756	99.72	1761	166546	96.39	1781	1.03	168327	97.42	4464	2.58	172791
1961	0	0.00	2	0.17	2	0.17	1160	99.83	1162	3185	35.94	1288	14.54	4473	50.48	4388	49.52	8861
1962	0	0.00	0	0.00	0	0.00	3417	100.00	3417	1835	4.77	4272	11.10	6107	15.86	32390	84.14	38497
1963	0	0.00	233	6.35	233	6.35	3436	93.65	3669	0	0.00	3437	13.25	3437	13.25	22494	86.75	25931
1964	1	0.02	2	0.04	3	0.06	5189	99.94	5192	189435	77.47	29543	12.08	218978	89.55	25554	10.45	244532
1965	11	0.14	13	0.17	24	0.31	7646	99.69	7670	76052	65.42	21558	18.55	97610	83.97	18634	16.03	116244
1966	0	0.00	2	0.01	2	0.01	13623	99.99	13625	254548	86.31	7674	2.60	262222	88.91	32696	11.09	294918
1967	0	0.00	2	0.02	2	0.02	9048	99.98	9050	40874	52.94	12937	16.76	53811	69.70	23393	30.30	77204
1968	32	0.75	1	0.02	33	0.77	4239	99.23	4272	281771	89.72	15207	4.84	296978	94.56	17082	5.44	314060
1969	6	0.04	64	0.46	70	0.50	13868	99.50	13938	64875	65.59	9606	9.71	74481	75.30	24425	24.70	98906
1970	5	0.06	40	0.46	45	0.51	8698	99.49	8743	491997	90.96	27567	5.10	519564	96.06	21327	3.94	540891
1971	7	0.03	11	0.05	18	0.09	20469	99.91	20487	82308	68.61	5427	4.52	87735	73.14	32222	26.86	119957
1972	144	1.05	15	0.11	159	1.16	13599	98.84	13758	749365	92.70	31783	3.93	781148	96.63	27242	3.37	808390
1973	9	0.17	4	0.07	13	0.24	5383	99.76	5396	55249	70.33	12826	16.33	68075	86.66	10477	13.34	78552
1974	795	3.79	5	0.02	800	3.81	20191	96.19	20991	280354	82.48	23043	6.78	303397	89.26	36522	10.74	339919
1975	778	4.39	72	0.41	850	4.80	16857	95.20	17707	51797	56.46	17134	18.68	68931	75.14	22811	24.86	91742
1976	1900	7.45	43	0.17	1943	7.62	23561	92.38	25504	25321	40.73	1727	2.78	27048	43.51	35115	56.49	62163
1977	21723	50.24	47	0.11	21770	50.34	21472	49.66	43242	131250	77.87	9586	5.69	140836	63.56	27718	16.44	168554
1978	9283	26.21	27	0.08	9310	26.28	26114	73.72	35424	260371	79.17	3365	1.02	263736	80.19	65137	19.81	328873
1979	23032	45.33	12	0.02	23044	45.35	27769	54.65	50813	416992	84.79	2702	0.55	419694	85.34	72093	14.66	491787
1980	10864	22.93	268	0.57	11132	23.49	36254	76.51	47386	165553	49.58	23709	7.10	189262	56.67	144681	43.33	333943
1981	8814	19.69	26	0.06	8840	19.75	35920	80.25	44760	135683	46.40	1774	0.61	137457	47.00	154989	53.00	292446
1982	4250	9.52	1	0.00	4251	9.52	40384	90.48	44635	82035	46.45	2293	1.30	84328	47.75	92289	52.25	176617
1983	3701	20.13	3	0.02	3704	20.14	14683	79.86	18387	503038	90.71	315	0.06	503353	90.76	51233	9.24	554586
1984	8211	20.70	7	0.02	8218	20.72	31444	79.28	39662	314301	77.26	2033	0.50	316334	77.76	90488	22.24	406822
AVERAGE 1954-63	1	0	24	1	25	1	2894	99	2919	183001	64	3076	7	186077	70	9553	30	196431
1964-73	22	0	15	0	37	0	10176	100	10213	228647	76	17413	9	246060	85	23305	15	269365
1974-84	8486	21	46	0	8533	21	26786	79	35319	215154	67	7971	4	223125	71	72098	29	295223

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[a] From B.C. Catch Statistics.

would have allowed catch and species mix assessments to be made for determining whether or not an extension was warranted based on a sockeye:chinook ratio in excess of 10:1 (Orman 1982). Otherwise, the cumulative chinook catch could be expected to outpace the catch timing of sockeye and pink salmon, often compromising either the maximization of sockeye and pink catches or the maintenance of the 5,000 chinook catch ceiling, as occurred in 1984. The 1984 management decision was affected by international policy, ie. the lack of a Canada-U.S. Salmon Agreement; fishing was extended another week to harvest Fraser River sockeye, thus further compromising chinook management goals. The area was opened for 1 day with M.U. 2-74 (Boulder Bay) closed as a means of minimizing any further chinook bicatch. An additional 14% (1,122 chinook) of the overall Area 2W chinook seine catch was taken on this last day of fishing, August 5-6.

Stock composition through scale analysis of the Area 2W sockeye catch indicated the following Fraser River sockeye component: (J. Gable, International Pacific Salmon Fisheries Commission (IPSFC), pers. comm.): July 27-31, 97%; August 3-4 (test fishery), 98%; August 5-6, 100%. In addition, tissue samples were collected for sockeye and pink salmon in an August 3-4 test fishery for comparative stock identification through starch gel electrophoresis. The test fishery also obtained biosamples on sex, length and age, and ensured that an abundance criterion of 10 sockeye for every one chinook was maintained prior to the extension of the interception net fishery in Rennell Sound on August 5-6. Results from the genetic sampling of the sockeye catch and comparative scale readings will be available at a later date.

Pink salmon stock identification in the catch was limited to the experimental results of electrophoresis on tissue samples collected August 3-4 for genetic stock separation. Results indicated the following stock proportions based on a sample size of 300 fish (T. Beacham, DFO (PBS), pers. comm.): 32% QCI pink salmon stocks, 62% North and Central Coast stocks, and 6% South Coast pink stocks. These results differed greatly from past scale analyses of odd-year pink salmon which indicated a high Fraser River stock component as well as other non-Skeena stocks in the catch (J. Woodey, IPSFC, pers. comm.).

In terms of stock management, no apparent conservation problems arose from the moderate pink catch and the third highest sockeye catch on record for this fishery. The essentially Fraser River sockeye component was derived from a stock size of 5.9 million (W. Sato, IPSFC, pers. comm.). An estimated exploitation rate of 1.5% was exerted in the Rennell Sound area on the predominant age 4_2 sockeye originating chiefly from the Chilco River.

As a result of the stock composition data provided from a 2-day test fishery in Rennell Sound in early August, conservation concerns arose for QCI pink salmon which were depressed in Areas 2W and 2E in 1984, and for some Central Coast stocks. This concern may warrant further sampling and possible curtailment of this fishery in early August in even years.

In terms of fleet management, Area 2W openings during the Rennell Sound interception net fishery were synchronized with fisheries in one or more of Areas 1, 3, 4, 5 and 6. Gear levels were consequently low to moderate and CPUE was relatively high. The low gear levels exhibited in Area 2W during the first two weeks of the fishery, July 15-28, were a consequence of the relatively poor passing stock abundance of sockeye in the area during this period.

MANAGEMENT SUMMARY AND RECOMMENDATIONS: AREA 1 AND 2W INTERCEPTION NET FISHERIES

The criteria for managing the Area 1 and 2W interception net fisheries which target on passing sockeye and pink salmon do not emphasize escapement since escapement, or rather stock size concerns, are largely unknown at the time of harvest in these outer waters. For some stocks, however, tagging and other means of stock separation which include scale analysis, genetic analysis through electrophoretic sampling of tissues, and parasite markers have provided seasonal and in some cases weekly identification of stock components in the catch in these areas. When this information is known, it becomes mandatory to consider the stock implications of interception harvest. Management of the fishery is often complicated by factors such as conservation concerns versus socio-economic considerations embodied in fleet distribution and number of fishing days. It is therefore important to priorize factors involved in fisheries management decisions in order to:

1. aid managers in making the correct management decision in complex situations,
2. provide consistency and accountability to the management approach,
3. communicate management priorities to user groups to ensure joint understanding and acceptance of the guidelines and their incorporation on the fishing grounds with minimum of conflict, and
4. provide a record of management which can be passed on to future fisheries managers and be improved upon annually.

With regard to the Area 1 and Area 2W interception net fisheries, it is recommended that:

1. the following priorized list of fisheries management considerations be reviewed for future management decisions:

    i) stock management, including escapement and test fishing information,
    ii) quota or fixed catch management ie. 5,000 chinook catch ceiling,
    iii) abundance indicators including tagging vessel catch, Indian Food Fishery catch and commercial hail catch,
    iv) fleet management and area coordination of fisheries and
    v) socio-economic or political considerations.

Flexibility must be maintained in the management regime due to the uncertainty in stock abundance, species mix in the catch, fleet dynamics, and achievement of management goals for chinook salmon. It is therefore recommended that:

2. the interception fisheries open on a 1-day announcement, thus providing the necessary time to appraise the fishery regarding the above noted factors prior to any extension of the fishery.

The CPUE hail sampling and the DFO catch statistics system should be improved to provide better in-season information when management decisions are made. Hail sampling improvements might include:

3. subsampling areas more thoroughly, spot checking the accuracy of the hailed catches by observing sample catches on deck, and evaluating catch estimate errors through sales slips. Hail catch inconsistencies for pink and chinook salmon, in particular, should be addressed. In Area 2W, an expansion factor should perhaps be applied to in-season catch estimates of chinook in order to achieve better management of the 5,000 chinook catch ceiling. In addition, sales slip checks and MRP sampling on a timely basis might effectively assist with this.

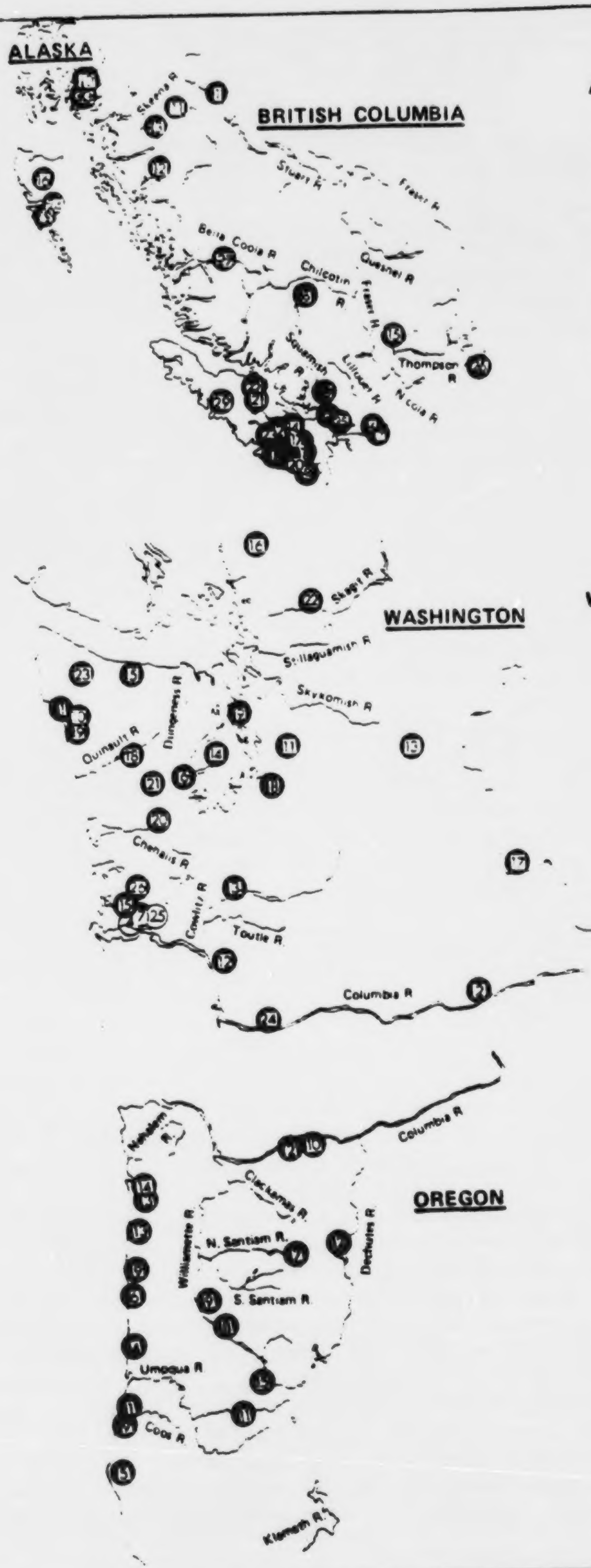
TROLL FISHERY, NORTH COAST AND QUEEN CHARLOTTE ISLANDS

The North Coast troll fishery, prominent in the waters surrounding the Queen Charlotte Islands has been the subject of much contention in recent years due to its dominant chinook catch. Despite severe chinook conservation requirements, approximately 215,000 chinook salmon have been caught annually in Areas 1-10, 30 and 31 (1980-84 average). The majority of this catch was taken in Areas 1, 2W and 2E (68%, 1980-84 average).

As a means of trying to reduce the North Coast troll catch of chinook salmon, major cutbacks in the troll season were implemented by DFO in 1984. In 1982 and 1983, troll fishery limitations amounted to a 2-week closure in June in an otherwise continuous 7 days/week fishery commencing April 15 for chinook and July 1 for coho and lasting until September 30 in North Coast waters. In 1984, the North Coast trolling season was delayed until May 23 when it opened for chinook salmon trolling at 1200 hrs PST and continued at 7 days/week until June 3 (1200 hrs PST) in Areas 1 to 11, 30-3 and 31, before closing again. The fishery was reopened on July 1 for chinook and coho salmon in the North Coast waters (Areas 1 to 11, 30-3 and 31) and continued thereafter at 7 days/week until 0001 hrs September 20, when the North Coast troll fishery was closed for the balance of the 1984 season.

Despite these significant cutbacks in fishing time in the north, the Area 1 troll chinook catch continued to escalate to nearly 118,000 fish in 1984, the highest troll chinook catch taken in Area 1 in over 30 years of catch records. Intensified effort and fleet size in Area 1, in addition to an observed abundance of passing chinook stocks, accounted for this increased catch. Stocks contributing to this catch originated from a variety of streams in the North and Central Coasts, Georgia Strait, West Coast Vancouver Island, Fraser River, Alaska, Washington and Oregon. Tagging sites of marked chinook recovered in the troll fisheries in Areas 1 and 2W in 1984 are showed in Figure 6 (data supplied by J. Thomas, MRP, 1985).

The conservation measure which limited the operational time of the troll fishery apparently only served to intensify the fishing effort, resulting in increased chinook catch. Since the initiation and extension of troll closures in the North Coast in 1982, the mean annual troll catch of chinook in Area 1, for example, has increased by nearly 70%, from a pre-closure annual mean of


ALASKA
BRITISH COLUMBIA
Skeena R.
Stuart R.
Fraser R.
Bella Coola R.
Chilcotin R.
Quesnel R.
Fraser R.
Squamish R.
Lillooet R.
Thompson R.
Nicola R.
WASHINGTON
Skagit R.
Stillaguamish R.
Skykomish R.
Dungeness R.
Quinault R.
Chehalis R.
Cowlitz R.
Toutle R.
Columbia R.
OREGON
Nehalem R.
Columbia R.
Clackamas R.
Willamette R.
N. Santiam R.
Deschutes R.
S. Santiam R.
Umpqua R.
Coos R.
Klamath R.

BRITISH COLUMBIA AND ALASKA TAGGING LOCATIONS

1. Babine R.
2. Big Qualicum
3. Capilano
4. Chehalis R.
5. Chemainus R.
6. Chilko R.
7. Chilliwack
8. Cowichan
9. Demamiel Cr.
10. Deer Mountain
11. Kispiox
12. Kitimat
13. Kitsumkalum
14. Little Qualicum
15. Loon Cr.
16. Masset
17. Nanaimo R.
18. Nitinat Lake
19. Pallant Cr
20. Port Renfrew
21. Puntledge
22. Quinsam
23. Robertson Cr.
24. Sachs Cr.
25. Seymour
26. Shuswap R.
27. Snootli Cr.
28. Tenderfoot Cr.
29. Tlupana
30. Whitman Lake

WASHINGTON TAGGING LOCATIONS

1. Chalaat Cr.
2. Columbia R.
3. Cowlitz R.
4. Elokomin
5. Elwha Channel
6. George Adams
7. Grays R.
8. Green R.
9. Grovers
10. Hoh R.
11. Issaquah
12. Kalama Falls
13. Leavenworth
14. Lost Cr.
15. Naselle
16. Nooksack
17. Priest Rapids
18. Quinault
19. Reservation Slough
20. Satsop
21. Simpson
22. Skagit
23. Soleduck
24. Washougal
25. Weyco Pond
26. Willapa

OREGON TAGGING LOCATIONS

1. Anadromous (Coos Bay)
2. Bonneville
3. Cedar Cr.
4. Domsea Farms (Siuslaw Bay)
5. Elk R.
6. Fall Cr.
7. Marion Forks
8. Mckenzie R.
9. Oregon Aqua-Foods (Coos Bay, Wright Cr., Yaquina Bay)
10. Oxbow
11. Rock Cr.
12. Round Butte
13. Salmon R.
14. Trask R.
15. Williamette R.

Fig. 6 . British Columbia , Alaska , Washington and Oregon tagging locations for coded - wire tagged chinook recovered in the troll fisheries in Areas 1 and 2W, 1984.

approximately 65,000 fish during 1972-81 to a 1982-84 annual mean of approximately 110,000 fish (Table 3).

Catches of other species of salmon by the troll fleet in 1984 in the waters surrounding the Queen Charlotte Islands are summarized by Area in Tables 3, 7 and 8. Of note, was the very high catch of pink salmon in Area 1, in excess of 1.1 million. This was the highest troll catch of pink salmon on record for Areas 1, 2W and 2E and represented a 53% increase over the previous high catch of approximately 720,000 taken in Area 1 in 1980 (Table 3). Likewise, the troll catches of all other salmon species in Area 1 were among the highest on record and represented the following increases over the previous 10-year (1974-83) averages: sockeye 274%, coho 73%, pink 664%, chum 1,606% and chinook 59% (Table 3). The percent increase in total Area 1 salmon catch in 1984 over the 1974-83 average was 396%.

Although troll catches of total salmon in Area 2W experienced a 30% increase over the previous 10-year average, a record catch of approximately 2,000 chum salmon in 1984 was the most notable increase by species in the 1954-84 catch history (Table 7). Specific increases over the previous 10-year (1974-83) averages were as follows: coho 16%, pink 67%, chum 195% and chinook 20%. The sockeye catch in Area 2W declined by 31% (Table 7).

In Area 2E, the 1984 total troll catch of 59,642 salmon (Table 8) was only 37% of the 1974-83 mean of nearly 160,000 salmon. Catch reductions by species from the previous 10-year average were as follows: sockeye 86%, coho 71% and chinook 72%. The chum troll catch increased by 45%, while the pink troll catch remained largely unchanged from the 1974-83 mean of approximately 18,000 pinks (Table 8).

PINK SALMON FISHERY, QUEEN CHARLOTTE ISLANDS

AREA 1 - MASSET INLET PINK SALMON FISHERY

1984 Pre-season forecasts

The 1984 salmon expectations and proposed net fishing pattern for Area 1 did not outline plans for an extensive net fishery on pink salmon in Masset Inlet (Fig. 4, Appendix 2). However, preliminary analysis of mark-recapture results from a 1983 downstream study of pink salmon juveniles on the Yakoun River (Fig. 4) indicated the possibility of a run size the following year in excess of the 750,000 spawning requirement for the Yakoun River (Orman 1984). There was high uncertainty in the magnitude of the 1984 return of pink salmon to the Yakoun River, particularly since a stock size in the order of 1-2 million pink salmon had not been experienced in over 15 years. For these reasons, fisheries management recommended that a fence be installed on the Yakoun River under the auspices of the International Tagging Program. This action was to provide comprehensive recovery data on tags applied to pink salmon in Alaskan and Canadian waters, as well as important daily run timing information on pink salmon with which to compare historical run patterns and resultant stocks sizes. These data, which became instrumental in managing the largest net fishery in Area 1 since 1968, were provided in-season through the construction

Table 8. Area 2E annual commercial salmon catches by species and gear, 1954-1984[a].

	SOCKEYE									COHO								
YEAR	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	33	60.00	21	38.18	54	98.18	1	1.82	55	18436	41.51	2371	5.34	18436	41.51	25981	58.49	44417
1955	2665	99.89	0	0.00	2665	99.89	3	0.11	2668	12550	15.48	2178	2.69	12550	15.48	68525	84.52	81075
1956	9	81.82	1	9.09	10	90.91	1	9.09	11	13252	11.63	1986	1.74	9982	8.76	103948	91.24	113930
1957	3	20.00	0	0.00	3	20.00	12	80.00	15	3239	2.81	137	0.12	3239	2.81	111925	97.19	115164
1958	5	14.71	1	2.94	6	17.65	28	82.35	34	3805	6.39	2184	3.67	3805	6.39	55729	93.61	59534
1959	0	0.00	454	87.64	454	87.64	64	12.36	518	786	1.45	4	0.01	786	1.45	53583	98.55	54369
1960	11	61.11	6	33.33	17	94.44	1	5.56	18	2508	3.54	562	0.79	2508	3.54	68326	96.46	70834
1961	2	66.67	0	0.00	2	66.67	1	33.33	3	10567	12.03	2690	3.06	10567	12.03	77276	87.97	87843
1962	38	28.57	86	64.66	124	93.23	9	6.77	133	8969	7.69	4739	4.07	8969	7.69	107605	92.31	116574
1963	1	0.61	141	85.98	142	86.59	22	13.41	164	9338	9.42	5105	5.15	9338	9.42	89801	90.58	99139
1964	63	10.48	527	87.69	590	98.17	11	1.83	601	16119	10.69	10229	6.79	16119	10.69	134608	89.31	150727
1965	16	1.89	794	93.96	810	95.86	35	4.14	845	7688	10.17	5859	7.75	7688	10.17	67888	89.83	75576
1966	7	2.71	160	62.02	167	64.73	91	35.27	258	6994	4.26	2862	1.74	6994	4.26	157061	95.74	164055
1967	8	0.68	878	75.17	886	75.86	282	24.14	1168	10955	12.71	11546	13.39	10955	12.71	75261	87.29	86216
1968	10	8.40	31	26.05	41	34.45	78	65.55	119	7140	5.30	14373	10.68	7140	5.30	127487	94.70	134627
1969	0	0.00	132	72.53	132	72.53	50	27.47	182	966	1.67	5074	8.78	966	1.67	56824	98.33	57790
1970	26	2.67	185	18.99	211	21.66	763	78.34	974	5583	5.64	16825	17.01	4776	4.83	94126	95.17	98902
1971	8	1.00	558	69.66	566	70.66	235	29.34	801	5344	4.71	13800	12.15	4196	3.70	109355	96.30	113551
1972	104	16.33	29	4.55	133	20.88	504	79.12	637	4662	3.84	6427	5.30	4662	3.84	116698	96.16	121360
1973	524	71.58	130	17.76	654	89.34	78	10.66	732	1931	2.06	7338	7.83	1931	2.06	91813	97.94	93744
1974	3070	51.74	473	7.97	3543	59.72	2390	40.28	5933	1591	1.58	3990	3.97	1591	1.58	99037	98.42	100628
1975	942	71.74	311	23.69	1253	95.43	60	4.57	1313	274	0.49	183	0.33	274	0.49	55914	99.51	56188
1976	1209	51.62	930	39.71	2139	91.33	203	8.67	2342	7071	3.56	2535	1.28	7071	3.56	191451	96.44	198522
1977	15	1.18	835	65.85	850	67.03	418	32.97	1268	5560	13.06	5299	12.45	5560	13.06	37010	86.94	42570
1978	60	1.75	85	2.48	145	4.22	3289	95.78	3434	1705	1.17	8202	5.65	1705	1.17	143531	98.83	145236
1979	0	0.00	0	0.00	0	0.00	645	100.00	645	0	0.00	0	0.00	0	0.00	105944	100.00	105944
1980	4580	91.67	143	2.86	4723	94.54	273	5.46	4996	1107	1.04	4808	4.51	1107	1.04	105438	98.96	106545
1981	175	1.48	719	6.09	894	7.58	10906	92.42	11800	117	0.12	679	0.67	117	0.12	100638	99.88	100755
1982	3	0.22	1	0.07	4	0.30	1348	99.70	1352	488	0.73	3163	4.72	488	0.73	66520	99.27	67008
1983	0	0.00	0	0.00	0	0.00	725	100.00	725	0	0.00	0	0.00	0	0.00	107003	100.00	107003
1984	22	7.05	4	1.28	26	8.33	286	91.67	312	2295	6.82	2167	6.44	4462	13.25	29204	86.75	33666
AVERAGE 1954-63	277	43	71	32	348	76	14	24	367	8345	11	2196	3	8018	11	76270	89	84288
1964-73	77	12	342	53	419	64	213	36	632	6738	6	9433	9	6543	6	103112	94	109655
1974-84	916	25	318	14	1234	39	1868	61	3381	1837	3	2821	4	2034	3	94699	97	96733

Table 8 (cont'd).

	PINK									CHUM								
YEAR	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	319764	98.13	5545	1.70	325309	99.83	538	0.17	325847	292031	88.76	36923	11.22	328954	99.98	55	0.02	329009
1955	25681	96.68	317	1.19	25998	97.87	566	2.13	26564	36060	65.08	19336	34.90	55396	99.98	10	0.02	55406
1956	152858	98.11	1008	0.65	153866	98.76	1933	1.24	155799	31546	66.60	15783	33.32	47329	99.92	40	0.08	47369
1957	127562	98.43	17	0.01	127579	98.44	2022	1.56	129601	9055	42.29	12310	57.49	21365	99.78	47	0.22	21412
1958	413325	97.13	11017	2.59	424342	99.72	1181	0.28	425523	13027	82.52	2727	17.27	15754	99.80	32	0.20	15786
1959	4340	56.34	388	5.04	4728	61.38	2975	38.62	7703	0	0.00	6	28.57	6	28.57	15	71.43	21
1960	189119	95.99	6868	3.49	195987	99.48	1033	0.52	197020	2744	85.86	444	13.89	3188	99.75	8	0.25	3196
1961	15807	85.99	445	2.42	16252	88.41	2131	11.59	18383	36655	55.29	29545	44.56	66200	99.85	100	0.15	66300
1962	789442	92.69	54162	6.36	843604	99.05	8121	0.95	851725	47355	44.39	59277	55.56	106632	99.95	58	0.05	106690
1963	2	0.04	2	0.04	4	0.07	5642	99.93	5646	64454	46.03	75448	53.88	139902	99.90	134	0.10	140036
1964	32932	63.08	4723	9.05	37655	72.13	14552	27.87	52207	292350	51.30	277226	48.64	569576	99.94	330	0.06	569906
1965	94	3.22	122	4.18	216	7.40	2703	92.60	2919	26471	34.75	49458	64.93	75929	99.68	241	0.32	76170
1966	275226	90.06	171	0.06	275397	90.12	30205	9.88	305602	85484	64.41	46870	35.32	132354	99.73	359	0.27	132713
1967	2140	15.13	534	3.78	2674	18.91	11469	81.09	14143	145423	37.12	246249	62.86	391672	99.98	97	0.02	391769
1968	471832	91.14	12723	2.46	484555	93.60	33126	6.40	517681	163373	28.65	406659	71.33	570032	99.98	109	0.02	570141
1969	23243	82.27	2489	8.81	25732	91.08	2519	8.92	28251	7243	14.22	43393	85.21	50636	99.44	287	0.56	50923
1970	532090	87.64	45416	7.48	577506	95.12	29599	4.88	607105	104565	28.65	259085	70.98	363650	99.63	1356	0.37	365006
1971	296	7.21	444	10.81	740	18.01	3368	81.99	4108	91375	30.13	210764	69.50	302139	99.64	1106	0.36	303245
1972	364437	90.96	11883	2.97	376320	93.93	24321	6.07	400641	76135	27.01	205353	72.85	281488	99.86	383	0.14	281871
1973	282	7.10	170	4.28	452	11.37	3522	88.63	3974	186468	43.28	244129	56.67	430597	99.95	216	0.05	430813
1974	218890	96.80	2664	1.18	221554	97.98	4579	2.02	226133	17171	11.41	132786	88.26	149957	99.68	486	0.32	150443
1975	5440	63.69	224	2.62	5664	66.31	2878	33.69	8542	214	9.61	1729	77.67	1943	87.29	283	12.71	2226
1976	1607072	98.70	16335	1.00	1623407	99.70	4852	0.30	1628259	18776	39.29	28939	60.56	47715	99.85	70	0.15	47785
1977	1459	15.08	1508	15.58	2967	30.66	6710	69.34	9677	57358	33.47	113463	66.20	170821	99.67	571	0.33	171392
1978	234993	93.93	2453	0.98	237446	94.91	12732	5.09	250178	25794	22.21	89445	77.00	115239	99.21	920	0.79	116159
1979	0	0.00	0	0.00	0	0.00	26041	100.00	26041	0	0.00	0	0.00	0	0.00	1059	100.00	1059
1980	803	2.34	200	0.58	1003	2.93	33261	97.07	34264	23559	19.83	94451	79.49	118010	99.31	815	0.69	118825
1981	864	4.44	43	0.22	907	4.67	18535	95.33	19442	10759	35.92	18492	61.74	29251	97.66	702	2.34	29953
1982	103	0.26	81	0.20	184	0.46	39662	99.54	39846	2559	6.82	34215	91.24	36774	98.07	725	1.93	37499
1983	0	0.00	0	0.00	0	0.00	32368	100.00	32368	0	0.00	0	0.00	0	0.00	885	100.00	885
1984	43505	69.91	124	0.20	43629	70.11	18600	29.89	62229	215542	76.50	65268	23.17	280810	99.67	940	0.33	281750
AVERAGE 1954-63	203790	82	7977	2	211767	84	2614	16	214381	53293	58	25180	35	78473	93	50	7	78523
1964-73	170257	54	7868	5	178125	59	15538	41	193663	117889	36	198919	64	316807	100	448	0	317256
1974-84	192103	40	2148	2	194251	43	18202	57	212453	33794	23	57617	57	86411	80	678	20	87089

Table 8 (cont't).

YEAR	CHINOOK									TOTAL SALMON								
	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL	SEINE	%TOTAL	GILLNET	%TOTAL	NET	%TOTAL	TROLL	%TOTAL	TOTAL
1954	0	0.00	3	0.07	3	0.07	4099	99.93	4102	630264	89.30	44863	6.36	675127	95.65	30674	4.35	705801
1955	0	0.00	0	0.00	0	0.00	3304	100.00	3304	76956	44.95	21831	12.75	98787	57.70	72408	42.30	171195
1956	2	0.02	38	0.44	40	0.46	8602	99.54	8642	197667	59.72	18816	5.68	216483	65.40	114524	34.60	331007
1957	1	0.01	0	0.00	1	0.01	8466	99.99	8467	139860	50.90	12464	4.54	152324	55.43	122472	44.57	274796
1958	0	0.00	0	0.00	0	0.00	8332	100.00	8332	430162	84.12	15929	3.11	446091	87.23	65302	12.77	511393
1959	0	0.00	2	0.02	2	0.02	10950	99.98	10952	5126	6.97	854	1.16	5980	8.13	67587	91.87	73567
1960	0	0.00	0	0.00	0	0.00	10145	100.00	10145	194382	68.98	7880	2.80	202262	71.78	79513	28.22	281775
1961	4	0.06	0	0.00	4	0.06	6886	99.94	6890	63035	34.61	32680	17.95	95715	52.56	86394	47.44	182109
1962	1	0.01	5	0.06	6	0.08	7733	99.92	7739	845805	77.77	118269	10.87	964074	88.64	123526	11.36	1087600
1963	66	0.90	19	0.26	85	1.16	7255	98.84	7340	73861	28.69	80715	31.35	154576	60.05	102854	39.95	257430
1964	18	0.35	89	1.74	107	2.09	5008	97.91	5115	341482	43.29	292794	37.12	634276	80.41	154509	19.59	788785
1965	19	0.17	94	0.86	113	1.03	10825	98.97	10938	34288	19.90	56327	32.69	90615	52.59	81692	47.41	172307
1966	68	0.55	11	0.09	79	0.64	12303	99.36	12382	367779	59.52	50074	8.10	417853	67.63	200019	32.37	617872
1967	27	0.21	300	2.37	327	2.58	12346	97.42	12673	158553	30.64	259507	50.14	418060	80.78	99455	19.22	517515
1968	19	0.15	438	3.41	457	3.56	12382	96.44	12839	642374	51.40	434224	34.74	1076598	86.14	173182	13.86	1249780
1969	0	0.00	76	0.26	76	0.26	28607	99.74	28683	31452	18.40	51164	29.94	82616	48.34	88287	51.66	170903
1970	59	0.27	312	1.40	371	1.67	21859	98.33	22230	642323	57.77	321823	28.94	964146	86.72	147703	13.28	1111849
1971	13	0.04	497	1.49	510	1.52	32948	98.48	33458	97036	20.64	226063	48.09	323099	68.73	147012	31.27	470111
1972	40	0.10	331	0.81	371	0.91	40479	99.09	40850	445378	52.29	224023	26.30	669401	78.59	182385	21.41	851786
1973	37	0.11	108	0.31	145	0.42	34647	99.58	34792	189242	33.12	251875	44.08	441117	77.20	130276	22.80	571393
1974	34	0.07	374	0.79	408	0.86	47016	99.14	47424	240756	45.04	140287	26.24	381043	71.28	153508	28.72	534551
1975	162	0.37	4	0.01	166	0.38	43771	99.62	43937	7032	6.26	2451	2.18	9483	8.44	102906	91.56	112389
1976	378	0.55	69	0.10	447	0.65	68377	99.35	68824	1634506	83.90	48808	2.51	1683314	86.40	264953	13.60	1948267
1977	113	0.30	218	0.58	331	0.88	37163	99.12	37494	64505	24.10	121323	45.32	185828	69.42	81872	30.58	267700
1978	443	1.29	18	0.05	461	1.35	33758	98.65	34219	262995	47.18	100203	17.98	363198	65.16	194230	34.84	557428
1979	0	0.00	0	0.00	0	0.00	39327	100.00	39327	0	0.00	0	0.00	0	0.00	173016	100.00	173016
1980	125	0.35	34	0.10	159	0.45	35265	99.55	35424	30174	9.90	99634	32.68	129810	42.58	175052	57.42	304862
1981	10	0.04	95	0.39	105	0.43	24080	99.57	24185	11925	6.38	20028	10.72	31953	17.10	154861	82.90	186814
1982	4	0.01	1	0.00	5	0.02	31512	99.98	31517	3157	1.75	37461	20.77	40618	22.52	139767	77.48	180385
1983	0	0.00	0	0.00	0	0.00	19300	100.00	19300	0	0.00	0	0.00	0	0.00	160281	94.28	160281
1984	35	0.33	46	0.43	81	0.76	10612	99.24	10693	261399	67.26	67609	17.40	329008	84.65	59642	15.35	388650
AVERAGE 1954-63	7	0	7	0	14	0	7577	100	7591	265712	55	35430	10	301142	64	86525	36	387667
1964-73	30	0	226	1	256	1	21140	99	21396	244991	39	216787	34	511778	73	140452	27	652230
1974-84	119	0	78	0	197	1	35471	99	35668	228768	27	57982	16	286750	43	150917	57	437668

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[a] From B.C. Catch Statistics.

of a weir, located approximately 9.5 km (6 mi) upstream from the mouth of the Yakoun River.

1984 Weekly fishing summary

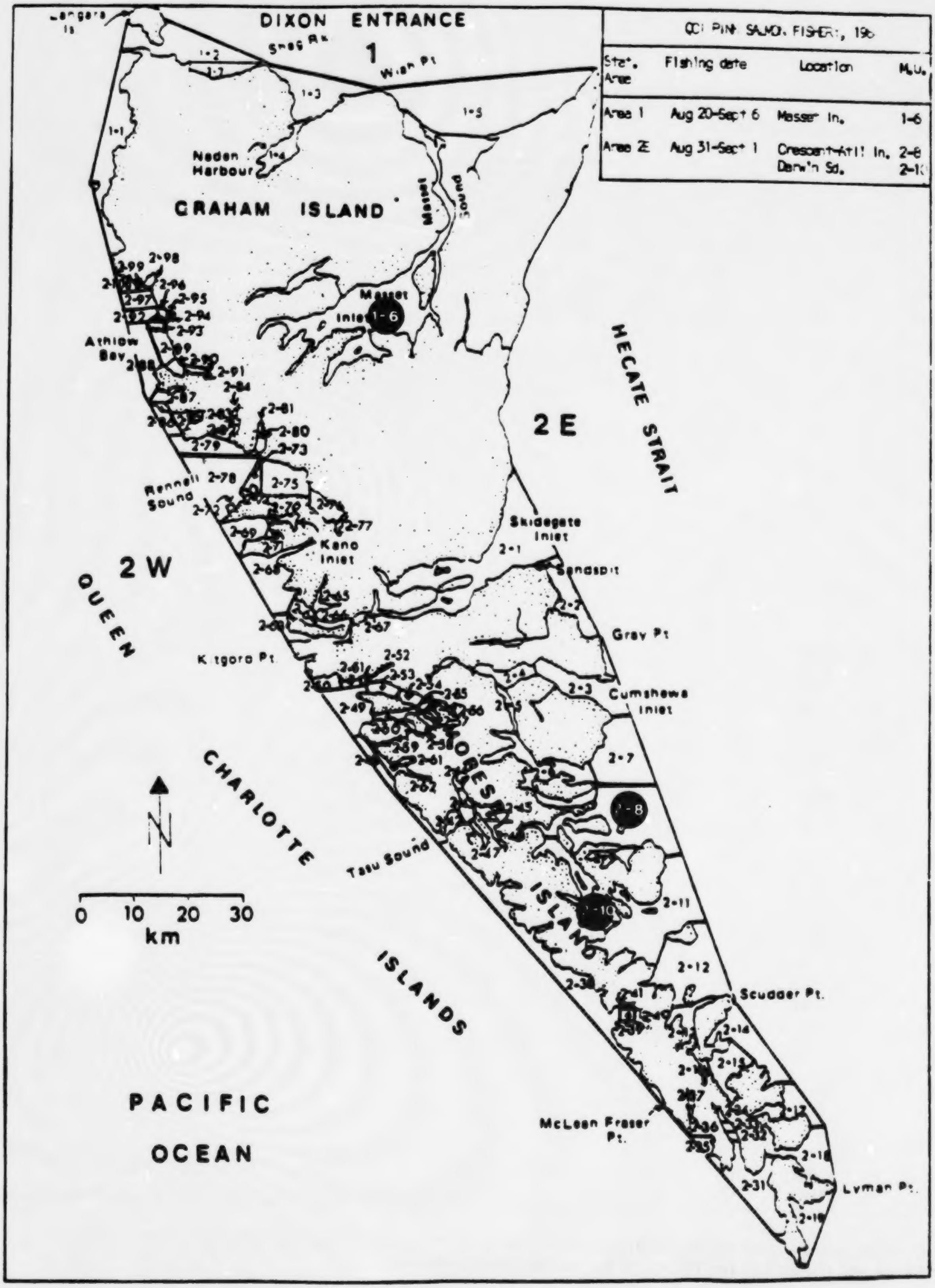
In Masset Inlet, an 18-day continuous net fishery commenced on August 20 at 0700 hrs (PDT) when an estimated 20% of the terminal area pink salmon stock originating chiefly from the Yakoun River was apparent through fence run timing data. The fishery continued uninterrupted until September 6 when it was closed at 1800 hrs (PDT) (Fig. 7). Enderud (MS 1984) provides a detailed review of this fishery and its management. Factors involved in deciding whether to open or extend the fishery included: catch levels of pink salmon, daily and cumulative fence count information on escaping pink salmon, historical escapement and run timing patterns, the number of pink salmon estimated to be holding in the river downstream of the fence coupled with the rate of entry of pink salmon into the river from Masset Inlet, catch or abundance indications from troll gear in nearshore Area 1 waters, fleet size, and bicatch of other salmon species in Masset Inlet, particularly chinook and coho salmon.

Daily terminal area catch and escapement, as well as fishery gear levels for the Yakoun River pink salmon run are shown in Table 9. Mean daily gear numbered 25 seines (range 2-54) and 1 gillnet. Daily pink salmon catch averaged nearly 40,000 fish for the seines and just over 100 pink salmon for the gillnets (Table 9). Final hail catch estimates for the fishery were approximately 700,000 seine-caught pink salmon and just over 2,000 gillnet-caught pink salmon. Minor hail catches of other salmon species totalled 62 sockeye, 788 coho, 117 chum and 166 chinook salmon. A terminal area exploitation rate of about 40% was estimated for the terminal area stock which was approximated at 1.8 million pink salmon (Table 9). A Yakoun River spawning escapement of 1.1 million pink salmon was the largest on record.

The Yakoun River pink salmon were observed to move very quickly up the inlet with little delay or holding off the river prior to entry (Enderud MS 1984). Escapements to the Yakoun River were first noted on August 7 and continued for about a month, ranging from approximately 5,000 pink salmon daily at the beginning and end of the run to a peak of over 200,000 fish on August 26. Escapement past the fence reached 50% completion by August 24-25, although actual stream entry occurred some days earlier. Also, the actual daily maximum escapement was greater than that recorded; limitation in manually counting fish through the fence and recovering tags somewhat slowed the enumeration process and at times caused a significant back-up of fish below the weir.

Assessment of the 1984 Masset Inlet pink salmon fishery

The 1984 Yakoun River pink salmon stock was among the largest on record, estimated at approximately 2.4 million salmon. Previous comparable stock sizes occurred in 1966 and 1968. Terminal area exploitation accounted for nearly 30% of the stock, the remainder of harvest occurring in outside areas including the Langara Island net fishery, Area 1 troll fishery, Area 3 net and troll fisheries, Noyes Island Alaskan net fishery and S.E. Alaska troll fishery. The extent of outside interceptions will be derived at a later date from data associated with the International Tagging Program.



QCI PINK SALMON FISHERY, 198

Stat. Area	Fishing date	Location	M.U.
Area 1	Aug 20-Sept 6	Masset In.	1-6
Area 2E	Aug 31-Sept 1	Crescent-Atli In. Darwin Sd.	2-8 2-1

DIXON ENTRANCE
Langara Is.
Shag Rk.
1
Wiah Pt.
1-2
1-3
1-1
1-4
1-5
Naden Harbour
GRAHAM ISLAND
Masset
Sound
Masset Inlet
1-6
HECATE STRAIT
2E
2W
Athlow Bay
Rennell Sound
Kano Inlet
Skidegate Inlet
Sandspit
Gray Pt.
Cumshewa Inlet
Kitgora Pt.
Tasu Sound
MORESBY ISLAND
QUEEN CHARLOTTE ISLANDS
PACIFIC OCEAN
2-8
2-10
2-11
2-12
Scudder Pt.
McLean Fraser Pt.
Lyman Pt.
N
0
10
20
30
km

Fig. 7. QCI pink salmon fishery in Masset Inlet and Darwin Sound, 1984: Management Units opened with corresponding fishing times and geographic locations during the August 20 - September 6 fishery.

Table 9. Daily terminal area catch and escapement (ESC) for the Yakoun River pink salmon, 1984 (SN - seine, GN - gillnet) [a, b].

DATE	NO. SN	SN CATCH	NO. GN	GN CATCH	NET CATCH	CUM. NET CATCH	% CUM. NET CATCH	ESC.	CUM. ESC.	% CUM. ESC.	STOCK	CUM. STOCK	% CUM. STOCK	% EXPLOITATION
AUG 1														
2														
3														
4														
5														
6														
7								1000	1000	0.09	1000	1000	0.06	
8								2000	3000	0.27	2000	3000	0.17	
9								3000	6000	0.54	3000	6000	0.33	
10								4000	10000	0.90	4000	10000	0.55	
11								5000	15000	1.36	5000	15000	0.83	
12								5000	20000	1.81	5000	20000	1.11	
13								5174	25174	2.28	5174	25174	1.39	
14								6263	31437	2.84	6263	31437	1.74	
15								11557	42994	3.89	11557	42994	2.38	
16								17363	60357	5.46	17363	60357	3.34	
17								12935	73292	6.63	12935	73292	4.05	
18								72913	146205	13.22	72913	146205	8.09	
19								48317	194522	17.58	48317	194522	10.76	
20	19	59450	2	400	59850	59850	8.53	49241	243763	22.04	109091	303613	16.79	55
21	23	75300	2	300	75600	135450	19.30	47373	291136	26.32	122973	426586	23.59	61
22	34	93100	2	300	93400	228850	32.60	48466	339602	30.70	141866	568452	31.44	66
23	43	83000	0	0	83000	311850	44.43	64973	404575	36.57	147973	716425	39.62	56
24	39	40032	0	0	40032	351882	50.13	130517	535092	48.37	170549	886974	49.05	23
25	35	60772	1	100	60872	412754	58.80	132520	667612	60.35	193392	1080366	59.75	31
26	34	44851	1	300	45151	457905	65.23	200040	867652	78.43	245191	1325557	73.31	18
27	34	42500	1	200	42700	500605	71.32	50000	917652	82.95	92700	1418257	78.44	46
28	54	61884	1	200	62084	562689	80.16	50006	967658	87.47	112090	1530347	84.63	55
29	43	38996	1	100	39096	601785	85.73	11030	978688	88.47	50126	1580473	87.41	78
30	22	29333	0	0	29333	631118	89.91	216	978904	88.49	29549	1610022	89.04	99
31	21	24630	1	200	24830	655948	93.45	27601	1006505	90.98	52431	1662453	91.94	47
SEP 1	16	17325	1	90	17415	673363	95.93	28689	1035194	93.58	46104	1708557	94.49	38
2	9	10200	0	0	10200	683563	97.38	36317	1071511	96.86	46517	1755074	97.06	22
3	12	9560	1	50	9610	693173	98.75	13756	1085267	98.10	23366	1778440	98.35	41
4	6	3150	1	50	3200	696373	99.21	8665	1093932	98.89	11865	1790305	99.01	27
5	5	4100	0	0	4100	700553	99.80	10215	1104147	99.81	14395	1804700	99.81	28
6	2	1400	0	0	1400	701953	100.00	1003	1105150	99.90	2403	1807103	99.94	58
7								1083	1106233	100.00	1083	1808186	100.00	0
8														
9														
10														
11														
12														
TOTAL	451	699663	15	2290	701953	701953	100	1106233	1106233	100	1808186	1808186	100	39
AVERAGE	25	38870	1	127	38997			34570			56506			45

[a] Daily escapement estimated from August 7 - 12 prior to in-river fence enumeration August 13.
[b] Seine and gillnet catches represent hailed field extrapolations.

In total, 38 tags were recovered on the Yakoun River from the International Tagging Program with the following release distribution (K. English, LGL Ltd., pers. comm.): 26 tags released from Area 1, 9 tags from Area 3X, and 3 tags from the U.S. side of Cape Muzon (Dall Island, Fig. 1). Tag release timing in these fisheries was discrete and occurred within a 3-week time period as follows: 4 tags released in the week ending August 4, 26 tags released in the week ending August 11, and 8 tags released in the week ending August 18. In addition to the above tags, 5 tags which were recovered in Masset Inlet net fishery were attributed to the Yakoun; these fish were originally tagged in Area 1 by troll gear (4 tags) and in Area 4 by net gear (1 tag). Interception rates of Yakoun pink salmon in Area 3X and Cape Muzon (Alaska) were very small and estimated at 0.5% and 0.1% respectively (B. Gazey, LGL Ltd., pers. comm.).

When the Masset Inlet fishery opened, stock size extrapolations using mean run timing fence count data from 1966 and 1968 relative to the cumulative 1984 fence count indicated a terminal run size in the order of 1 million plus salmon at an estimated 20% of the run to date. This estimate was well in excess of the 750,000 spawning requirement. The decision to open a fishery in Masset Inlet for the first time in over a decade was based on these stock indications and the ability to manage the fishery through fence count data and historical run timing information. If the run continued to build, the fishery would be extended; if the run suddenly declined, a closure would be announced until such time as stock indications warranted reopening.

In 1984, the pink salmon run in Masset Inlet continued to build until late August and,despite an 18-day continuous commercial fishery, the terminal area exploitation was not sufficient to crop the harvestable surplus. Several hundred thousand pink salmon escaped in addition to the optimal spawning requirement of 750,000 pink salmon. This surplus of spawners presented the opportunity to test the success rate of production from an upper spawning limit (see Edgeworth MS 1966). Stream observations during the fall of 1984 indicated that the pink salmon spawners were generally evenly distributed in high concentrations throughout the river, utilizing upstream spawning areas which were previously underutilized. Heavy flooding and scouring of the riverbed in the late fall presumably caused substantial mortality (Enderud MS 1984) and hydraulic sampling results in late January indicated qualitatively that as much as 80% of the spawn might have suffered heavy mortality. During the 1984/85 overwintering season, stream stability appeared to be a limiting factor in pink salmon egg-to-fry survival. Logging practises may have accounted for some of the flash - flooding effects on the Yakoun River.

Post-season assessment indicated that the fishery opened when approximately 11% of the terminal area stock was present, substantially less than the 20% estimated early in-season. Five more days elapsed before stock projections tracked the terminal area run size more accurately. However, as it turned out, this overestimate in the proportion of the terminal area run size apparent to date worked in favour of the fishery, possibly providing earlier fishing opportunities to the fleet. Even then, gear levels in Masset Inlet remained moderate in 1984 and the harvesting pressure was insufficient to crop the surplus stock since most of the fleet in the region was targeting on Skeena River sockeye and pink salmon in nearby areas. Although the pink salmon in Masset Inlet were of high quality, they were economically a less desirable target net species. In addition, the majority of seine vessels lacked the shallow nets (2.5 strip seines) required to fish the shallow and difficult waters of Masset Inlet and therefore tended to fish elsewhere.

AREA 2E - DARWIN SOUND PINK SALMON FISHERY

1984 Pre-season forecasts

The 1984 salmon expectations and proposed net fishing pattern for Area 2E are presented in Appendix 5. While the overall abundance forecast was estimated to be below optimum, small surpluses were anticipated for pink and chum salmon in isolated inlets. In particular, a small surplus of pink salmon was expected in Darwin Sound (Fig. 7).

1984 Weekly fishing summary

In Area 2E, pink salmon fishing was limited to a 2-day opening, August 31-September 1, in Darwin Sound, M.U.'s 2-8 and 2-10 (Fig. 7). Boundaries associated with this fishery and other fisheries in Area 2E are documented in Appendix 6. The fishery commenced at 0800 hrs (PDT) and ended at 1800 hrs a day later. An estimated 62,000 pink salmon were caught by approximately 67 seines and 2 gillnets; non-target species catch included 360 coho and 2,366 chum. Factors involved in deciding whether to open or extend the fishery included qualitative stock assessment information such as number of jumpers observed by air or from patrol vessels in Darwin Sound, estimated escapement to Darwin Sound streams based on foot surveys, catch indications early in the fishery, and gear considerations.

Assessment of the 1984 Darwin Sound pink salmon fishery

The fishery in Darwin Sound exploited 48% of the available pink salmon stock. Escapement to area streams was optimal except for an unexpected strong return to Echo Harbour Creek which remained unharvested and resulted in an escapement of 28,000 pink salmon (optimum 10,000). The difficulty in assessing stock returns in Darwin Sound and the rapid movement of the Echo Harbour run made management in this area uncertain and accounted for the only significant missed fishing opportunity on the Queen Charlotte Islands in 1984.

Results from the 1984 tagging of pink salmon under the International Tagging Program included the recovery of 9 tags from pink salmon spawning in Area 2E streams. Tag release distribution was as follows (K. English, LGL Ltd., pers. comm.): 7 tags released from southern Dixon Entrance, Area 1 (primarily McIntyre Bay), 1 tag released from Area 3X, and 1 tag released from Area 4. Tag release timing in these fisheries was very discrete and all releases occurred within the same week, August 5-11, in 1984. Interception rates of Area 2E pink salmon in Areas 1 and 3X were very low, estimated at 1% and 0.1% respectively (K. English, LGL Ltd., pers. comm.).

AREA 2W

There were no pink salmon fisheries directed on local stocks in Area 2W in 1984.

CHUM SALMON FISHERY, QUEEN CHARLOTTE ISLANDS

1984 PRE-SEASON FORECASTS

Chum salmon stock returns to Areas 1, 2W and 2E were in general forecast to be less than optimal (Append. 2, 3 and 5). However, small surpluses were anticipated in isolated inlets, notably Tasu Sound, Port Chanal and Flamingo Inlet in Area 2W, and Skidegate and Skincuttle Inlets in Area 2E (Fig. 4). In addition, a limited fishery was expected on enhanced returns of chum salmon to the Pallant Creek Hatchery in Cumshewa Inlet, Area 2E.

1984 WEEKLY FISHING SUMMARY

A summary of QCI chum fishery openings is presented in Table 10. In total, 7 chum fisheries were coordinated over 5 weeks among inlets in Areas 1, 2W and 2E, providing 10 days of fall chum fishing to a substantial fleet which peaked in late September at 99 gillnets and 93 seines. Openings were held in the following inlets: Masset Inlet in Area 1; Skidegate Inlet, Darwin Sound, Cumshewa Inlet and Selwyn Inlet in Area 2E; and West Skidegate Inlet, Tasu Sound, Trounce Inlet, Englefield Bay, Flamingo Inlet, Nesto Inlet, Port Chanal and Seal Inlet in Area 2W (Fig. 4). Opening times are presented in Table 10, and Management Units with corresponding boundaries are shown in Figures 8 to 23 and Appendix 6. Hail catches of chum and coho salmon and gear levels with associated catch proportions are included in Table 10. Nearly 400,000 chum salmon were estimated to have been harvested in the QCI fall chum fishery with the following breakdown by Statistical Area: Area 2E, approximately 271,000; Area 2W, approximately 125,000 chum; and Area 1, a negligible catch during an exploratory fishery in Masset Inlet. Skidegate Inlet in Area 2E supported the largest and most extensive fishery, accounting for nearly 50% of the Area 2E catch and over 30% of the total QCI fall chum catch. Other prominent fisheries occurred in Darwin Sound, Cumshewa Inlet, West Skidegate Inlet and Tasu Sound.

A weekly breakdown of sales slip catches from these fisheries is presented by Statistical Area in Table 11. Approximately 365,000 chum salmon were recorded on catch sales slips from mid-September to late October with the following breakdown by Statistical Area: Area 2E, 279,533 chum, Area 2W, 87,988 chum, and Area 1, 67 chum. Coho catches in the fall net fishery were as follows: 3,782 in Area 2E, 1,407 in Area 2W, and 3 in Area 1. The QCI chum catches as recorded on sales slips were similar to hailed catches in Areas 1 and 2E but 30% below the hailed catch in Area 2W (Tables 10 and 11).

Additional qualitative stock assessment information on chum salmon is provided for Skidegate Inlet (Appendix 7), Cumshewa and Selwyn Inlets (Appendix 8), Darwin Sound and Atli Inlet (Appendix 9) and Juan Perez Sound, Skincuttle Inlet and southern tip of Moresby Island (Appendix 10). Appendix 11 provides quantitative information on chum salmon in Cumshewa Inlet in the form of daily fence counts and run timing data at Pallant Creek from 1980 to 1984. Gillnet test fishing abundance indices at specific sites in Cumshewa Inlet are given for 1982 and 1984 in Appendix 12.

Factors involved in deciding whether to open or extend the QCI fall chum fishery in 1984 included: qualitative stock assessment in inlets, off creek

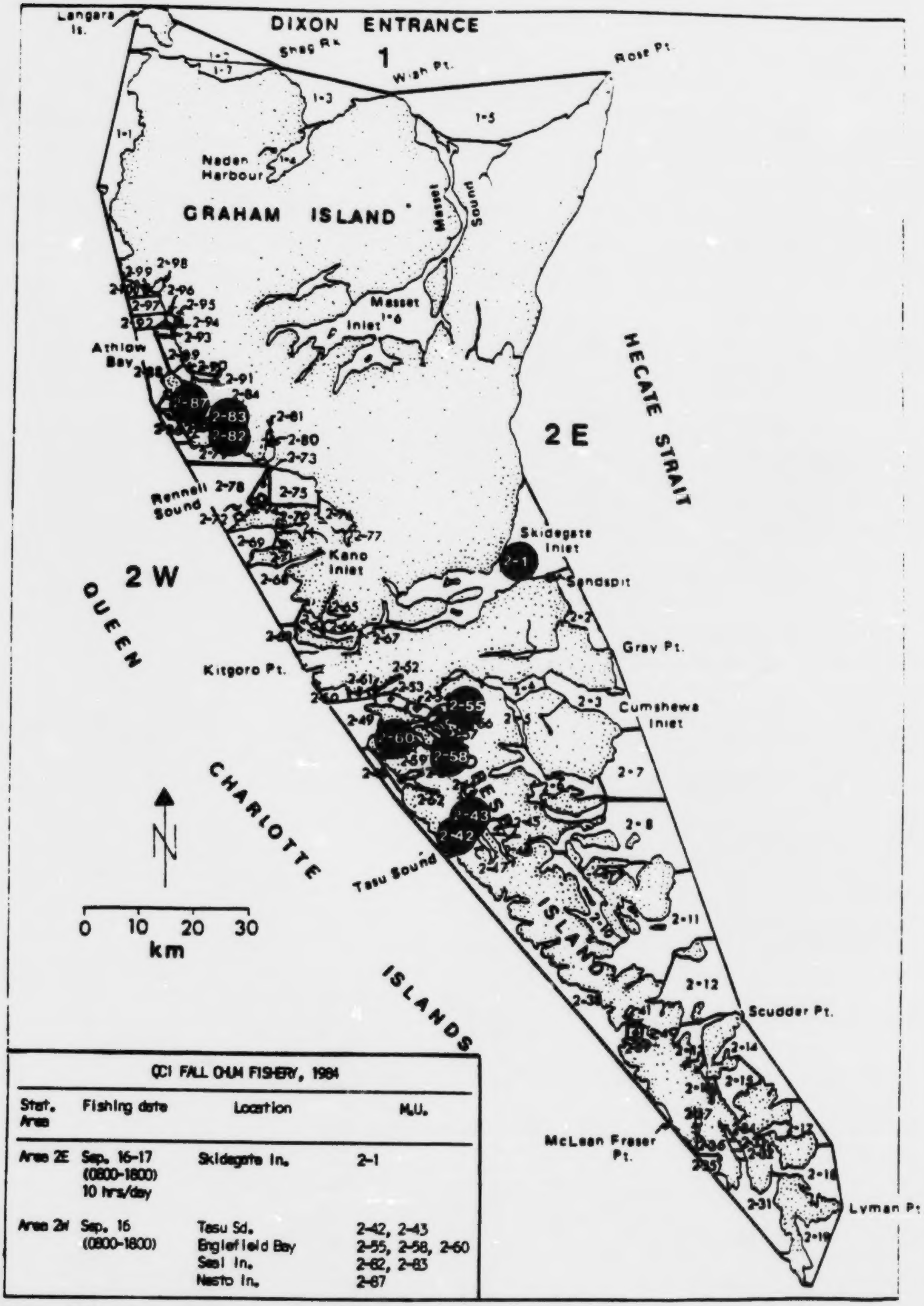
Table 10. Queen Charlotte Islands chum and incidental coho catches in the net fishery, September 16 - October 22, 1984 (hailed catches).

DATE	TIME	STAT AREA	INLET	MANG'T UNIT	GEAR	FLEET SIZE	CHUM CATCH	GEAR %	CUM. CATCH	CUM. GEAR %	COHO CATCH	GEAR %	CUM. CATCH	CUM. GEAR %
SEPT 16	0000-1000	2W	NESTO	2-87	SN	3	2900	100.00	2900	100.00				
		2W	SEAL	2-82 2-83	SN	1	500	100.00	500	100.00				
		2W	ENGLEFIELD	2-55 2-58 2-60	SN	28	13500	100.00	13500	100.00				
		2W	TASU	2-42 2-43	GN	12	3150	100.00	3150	100.00	160	100.00	160	100.00
		2E	SKIDEGATE	2-1	SN	14	11650	51.07	11650	51.07	30	45.45	30	45.45
					GN	63	11164	48.93	11164	48.93	36	54.55	36	54.55
					TOTAL		22814		22814		66		66	
SEPT 17	0000-1000	2E	SKIDEGATE	2-1	SN	35	4200	37.93	15850	46.77	45	43.69	75	44.38
					GN	64	6873	62.07	18037	53.23	58	56.31	94	55.62
					TOTAL		11073		33887		103		169	
SEPT 23	0800-1000	2W	TASU	2-42	SN	29	28422	98.87	31572	98.98	665	95.14	825	96.04
				2-43	GN	12	326	1.13	326	1.02	34	4.86	34	3.96
					TOTAL		28748		31898		699		859	
SEPT 26	0800-1000	2W	NESTO	2-87	SN	1	2150	100.00	5050	100.00				
		2W	SEAL	2-82 2-83	SN	0	0		500	100.00				
		2W	WEST SKIDEGATE	2-64	SN	33	15365	96.49	15365	96.49				
				2-65	GN	4	559	3.51	559	3.51				
				2-66	TOTAL		15924		15924					
		2W	TROUNCE	2-67	SN	8	11000	91.18	11000	91.18				
					GN	6	1064	8.82	1064	8.82				
					TOTAL		12064		12064					
		2W	FLAMINGO	2-35 2-36 2-37	SN	4	4900	100.00	4900	100.00				
		2E	SKIDEGATE	2-1	SN	19	20025	67.11	35875	56.30	60	16.17	135	25.00
					GN	65	9812	32.89	27849	43.70	311	83.83	405	75.00
					TOTAL		29837		63724		371		540	
		2E	CUMSHEWA	2-3	SN	28	37155	97.39	37155	97.39	532	90.63	532	90.63
				2-4	GN	11	997	2.61	997	2.61	55	9.37	55	9.37
					TOTAL		38152		38152		587		587	
SEPT 27	0000-1000	2W	NESTO	2-87	SN	1	50	100.00	5100	100.00				
		2W	SEAL	2-82 2-83	SN	2	0		500	100.00				
		2W	WEST SKIDEGATE	2-64	SN	15	3010	94.03	18375	96.08				
				2-65	GN	4	191	5.97	750	3.92				
				2-66	TOTAL		3201		19125					
		2W	TROUNCE	2-67	SN	2	2300	69.70	13300	86.57				
					GN	6	1000	30.30	2064	13.43				
					TOTAL		3300		15364					
		2W	FLAMINGO	2-35 2-36 2-37	SN	2	1470	100.00	6370	100.00				
		2E	SKIDEGATE	2-1	SN	16	18350	65.30	54225	59.05	40	10.61	175	19.08
					GN	74	9753	34.70	37602	40.95	337	89.39	742	80.92
					TOTAL		28103		91827		377		917	
		2E	CUMSHEWA	2-3	SN	42	9048	94.39	46203	0.97	250	0.94	782	91.78
				2-4	GN	11	538	5.61	1535	3.22	15	5.66	70	8.22
					TOTAL		9586		47738		265		852	
SEPT 30	0800-1000	2W	WEST SKIDEGATE	2-64	SN	1	900	100.00	19275	50.19				
				2-65	GN				19129	49.81				
				2-66	TOTAL		900		38404					
		2W	TROUNCE	2-67	SN	2	2240	91.06	15540	87.19				
					GN	1	220	0.94	2284	12.81				
					TOTAL		2460		17824					

Table 10 (cont'd).

DATE	TIME	STAT AREA	INLET	MANAG UNIT	GEAR	FLEET SIZE	CHUM CATCH	GEAR %	CUM. CATCH	CUM. GEAR %	COHO CATCH	GEAR %	CUM. CATCH	CUM. GEAR %
SEPT 28	0800-1600	2E	SKIDEGATE	2-1	SN	33	16315	65.81	70540	60.49	100	19.92	275	19.38
					GN	65	8475	34.19	46077	39.51	402	80.08	1144	80.62
					TOTAL		24790		116617		502		1419	
		2E	SELWYN	2-6	SN	50	6700	62.83	6700	62.83	200	67.34	200	67.34
					GN	29	3963	37.17	3963	37.17	97	32.66	97	32.66
					TOTAL		10663		10663		297		297	
OCT 3	0800-	2W	PORT CHANAL	2-90 2-91	SN	11	4920	100.00	4920	100.00				
OCT 4	-1200	2W	PORT CHANAL	2-90 2-91	SN	10	82	100.00	5002	100.00				
OCT 5	1230-	2E	SKIDEGATE	2-1	SN	9	6325	67.83	76865	61.03	93	18.86	368	19.25
					GN	35	3000	32.17	49077	38.97	400	81.14	1544	80.75
					TOTAL		9325		125942		493		1912	
		2E	DARWIN	2-8	SN	47	7200	87.80	7200	87.80				
				2-10	GN	17	1000	12.20	1000	12.20				
					TOTAL	64	8200		8200					
		1	MASSET	1-6	SN	2								
OCT 10	-1000	2E	SKIDEGATE	2-1	SN	4	660	14.04	77525	59.34			368	15.44
					GN	37	4041	85.96	53118	40.66	472	100.00	2016	84.56
					TOTAL	41	4701		130643				2384	
		2E	DARWIN	2-8	SN	47	27913	85.11	35113	85.65	314	84.64	314	84.64
				2-10	GN	22	4885	14.89	5885	14.35	57	15.36	57	15.36
					TOTAL		32798		40998		371		371	
		1	MASSET	1-6	SN	2	6	100.00	6	100.00				
	0800-1600	2W	TROUNCE	2-67	SN	6	6200	94.95	21740	89.27				
					GN	2	330	5.05	2614	10.73				
					TOTAL		6530		24354					
OCT 22	0800-1600	2E	SKIDEGATE	2-1	SN	2			77525	59.30			368	22.69
					GN	3	80	100.00	53198	40.70	110	100.00	1254	77.31
					TOTAL				130723				1622	
		2E	DARWIN	2-8	SN	17	39100	96.06	74213	90.84			314	84.64
				2-10	GN	6	1602	3.94	7487	9.16			57	15.36
					TOTAL		40702		81700				371	

CATCH TOTALS 1984		CHUM	COHO
AREA 1	MASSET	6	
	TOTAL	6	
AREA 2E	SKIDEGATE	130723	1622
	DARWIN	81700	371
	CUMSHEWA	47736	852
	SELWYN	10663	297
	TOTAL	270824	3142
AREA 2W	WEST SKIDEGATE	30404	
	TASU	31099	859
	TROUNCE	24354	
	ENGLEFIELD	13500	
	FLAMINGO	6370	
	NESTO	5100	
	PORT CHANAL	5002	
	SEAL	500	
	TOTAL	125129	859
QUEEN CHARLOTTE ISLANDS TOTAL		395959	4001


DIXON ENTRANCE
Langara Is.
Shag Rk
1
Wiah Pt.
Rose Pt.
1-3
1-5
1-1
1-7
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
1-6
HECATE STRAIT
2E
2W
Athlow Bay
2-99
2-98
2-96
2-97
2-95
2-94
2-92
2-93
2-89
2-90
2-91
2-84
2-87
2-83
2-82
2-81
2-80
2-73
Rennell Sound
2-78
2-75
2-72
2-70
2-76
2-77
2-69
2-71
Kano Inlet
2-68
2-65
2-66
2-67
Skidegate Inlet
2-1
Sandspit
2-2
Gray Pt.
Kitgoro Pt.
2-61
2-52
2-53
2-50
2-55
2-49
2-60
2-56
2-57
2-58
2-59
2-4
2-3
2-5
Cumshewa Inlet
2-7
2-62
2-43
2-42
2-45
2-47
2-8
Tasu Sound
QUEEN CHARLOTTE ISLANDS
MORESBY ISLAND
2-11
2-10
2-12
2-38
Scudder Pt.
2-14
2-13
2-37
2-17
McLean Fraser Pt.
2-36
2-35
2-31
2-16
2-19
Lyman Pt
N
0
10
20
30
km

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 2E	Sep. 16-17 (0800-1800) 10 hrs/day	Skidegate In.	2-1
Area 2W	Sep. 16 (0800-1800)	Tasu Sd.	2-42, 2-43
		Englefield Bay	2-55, 2-58, 2-60
		Seal In.	2-82, 2-83
		Nesto In.	2-87

Fig. 8. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the September 16-17 fishery.

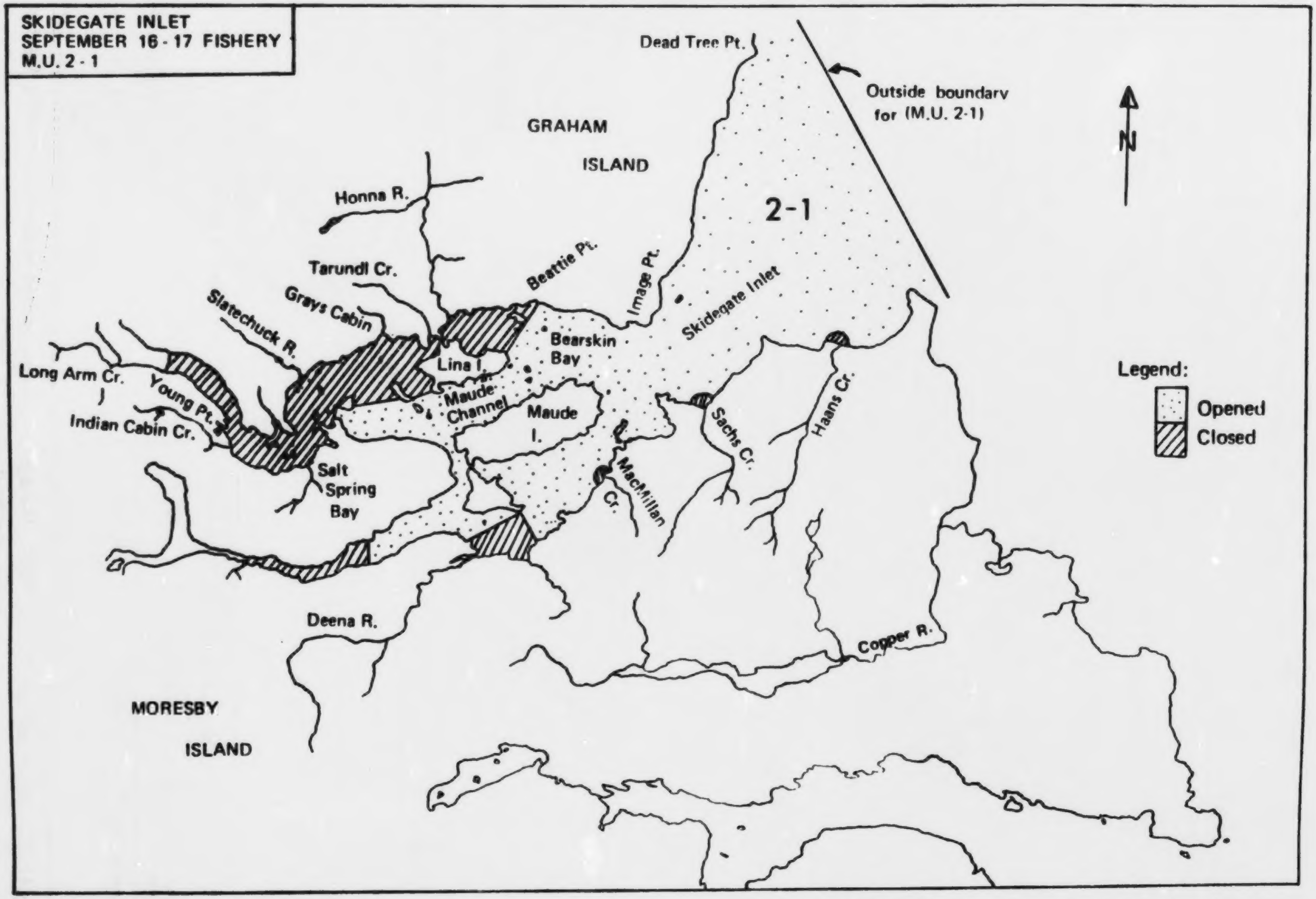
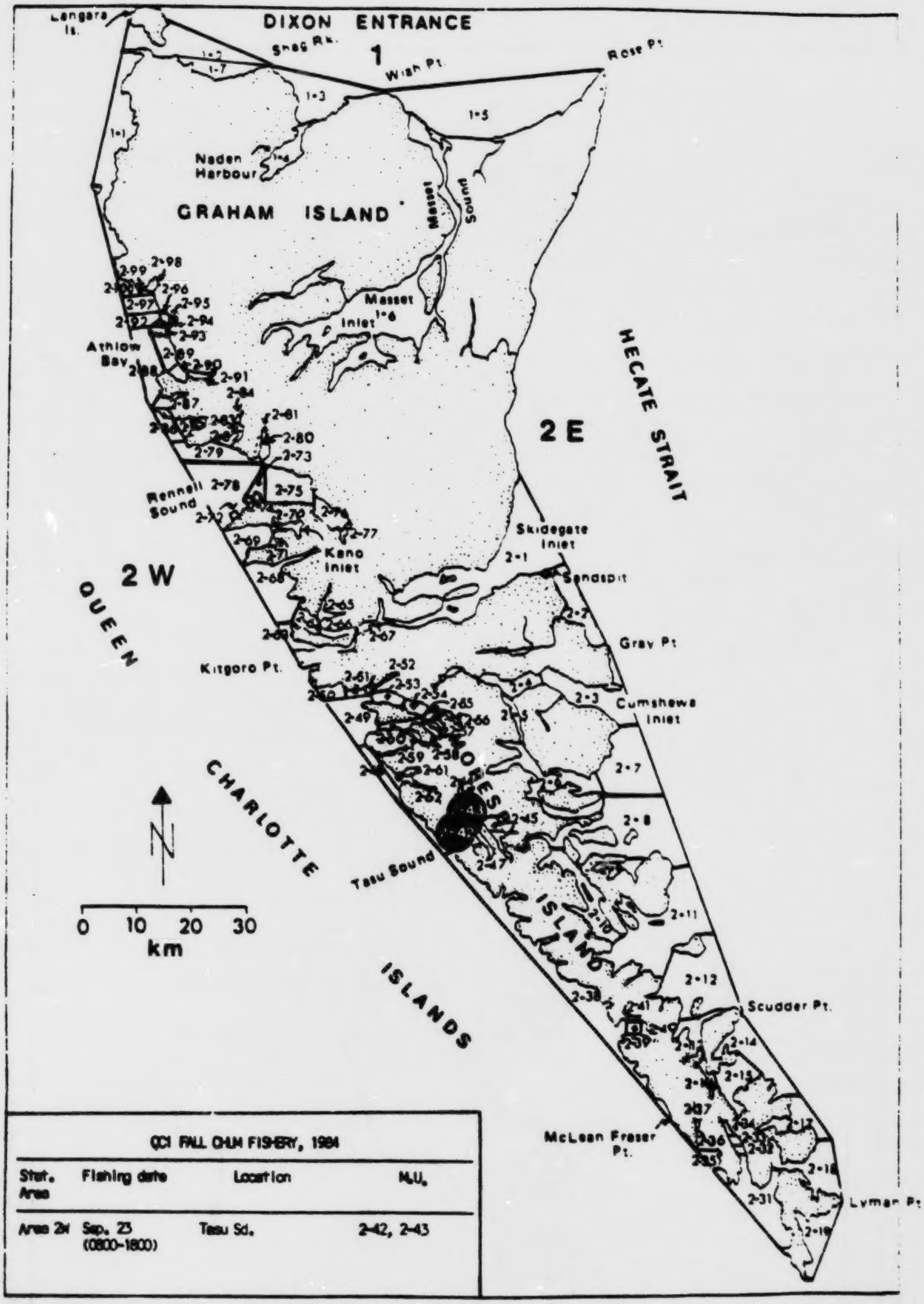
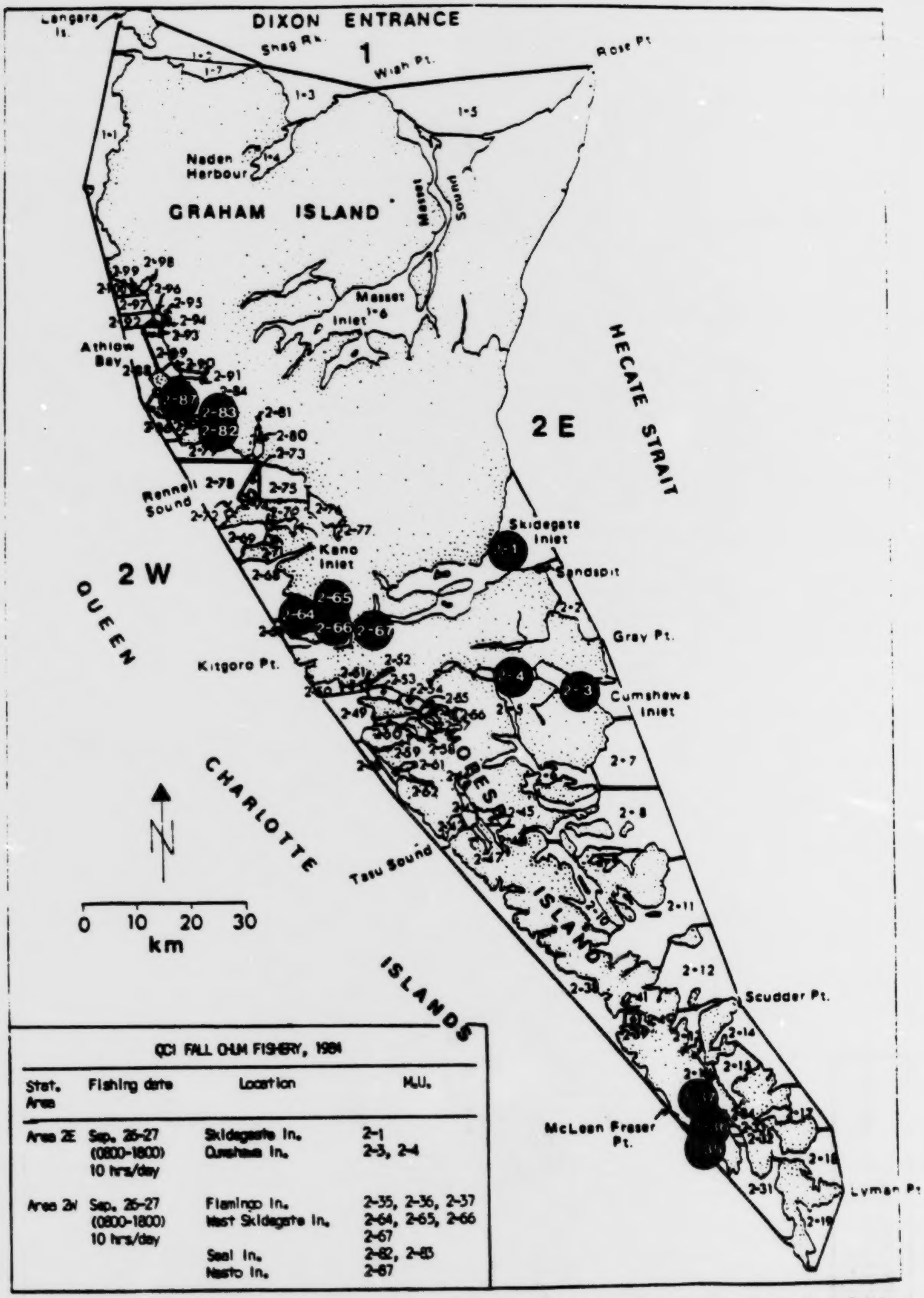

SKIDEGATE INLET
SEPTEMBER 16 - 17 FISHERY
M.U. 2 - 1
Dead Tree Pt.
Outside boundary for (M.U. 2-1)
N
GRAHAM
ISLAND
2-1
Honna R.
Tarundl Cr.
Grays Cabin
Slatechuck R.
Beattie Pt.
Image Pt.
Skidegate Inlet
Bearskin Bay
Lina I.
Maude Channel
Maude I.
Long Arm Cr.
Young Pt.
Indian Cabin Cr.
Salt Spring Bay
Sachs Cr.
Haans Cr.
MacMillan Cr.
Legend:
Opened
Closed
Deena R.
Copper R.
MORESBY
ISLAND

Fig. 9. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Skidegate Inlet (M.U. 2-1) during the September 16 - 17 fishery.


DIXON ENTRANCE
Langara Is.
Snag Rk.
1
Wish Pt.
Rose Pt.
1-2
1-7
1-3
1-5
1-1
Naden Harbour
1-4
GRAHAM ISLAND
Masset Sound
2-99
2-98
2-96
2-97
2-95
2-92
2-94
2-93
Athlow Bay
2-89
2-90
2-88
2-91
2-84
2-87
2-81
2-83
2-80
2-79
2-73
Rennell Sound
2-78
2-75
2-72
2-70
2-76
2-77
2-69
2-71
Kano Inlet
2-68
2-65
2-64
2-67
Masset Inlet
1-6
2E
HECATE STRAIT
Skidegate Inlet
2-1
Sandspit
2-2
Gray Pt.
2W
QUEEN CHARLOTTE ISLANDS
Kitgoro Pt.
2-52
2-51
2-53
2-50
2-54
2-55
2-49
2-56
2-59
2-58
2-61
2-62
2-43
2-42
2-45
2-47
Tasu Sound
MORESBY ISLAND
2-4
2-3
Cumshewa Inlet
2-5
2-7
2-8
2-11
2-12
2-38
2-41
2-40
2-39
Scudder Pt.
2-14
2-15
2-37
2-34
2-17
McLean Fraser Pt.
2-36
2-32
2-35
2-18
2-31
Lyman Pt.
2-19
N
0
10
20
30
km

QCI FALL CHUM FISHERY, 1984			
Stat. Area	Fishing date	Location	M.U.
Area 2W	Sep. 23 (0800-1800)	Tasu Sd.	2-42, 2-43

Fig. 10. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the September 23 fishery.


DIXON ENTRANCE
Langara Is.
Snag Rk.
1
Wiah Pt.
Rose Pt.
1-1
1-2
1-3
1-4
1-5
1-6
1-7
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
HECATE STRAIT
2 E
2 W
QUEEN CHARLOTTE ISLANDS
Athlow Bay
Rennell Sound
Kano Inlet
Skidegate Inlet
Sandspit
Gray Pt.
Kitgoro Pt.
Cumshewa Inlet
Tasu Sound
MORESBY ISLAND
Scudder Pt.
McLean Fraser Pt.
Lyman Pt.
2-1
2-3
2-4
2-7
2-8
2-11
2-12
2-14
2-18
2-19
2-31
2-35
2-36
2-37
2-45
2-49
2-52
2-53
2-58
2-59
2-61
2-62
2-64
2-65
2-66
2-67
2-73
2-75
2-77
2-78
2-80
2-81
2-82
2-83
2-84
2-87
2-90
2-91
2-93
2-94
2-95
2-96
2-97
2-98
2-99
N
0 10 20 30
km

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 2E	Sep. 26-27 (0800-1800) 10 hrs/day	Skidegate In. Cumshewa In.	2-1 2-3, 2-4
Area 2W	Sep. 26-27 (0800-1800) 10 hrs/day	Flamingo In. West Skidegate In. Seal In. Nesto In.	2-35, 2-36, 2-37 2-64, 2-65, 2-66 2-67 2-82, 2-83 2-87

Fig. 11. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the September 26 - 27 fishery.

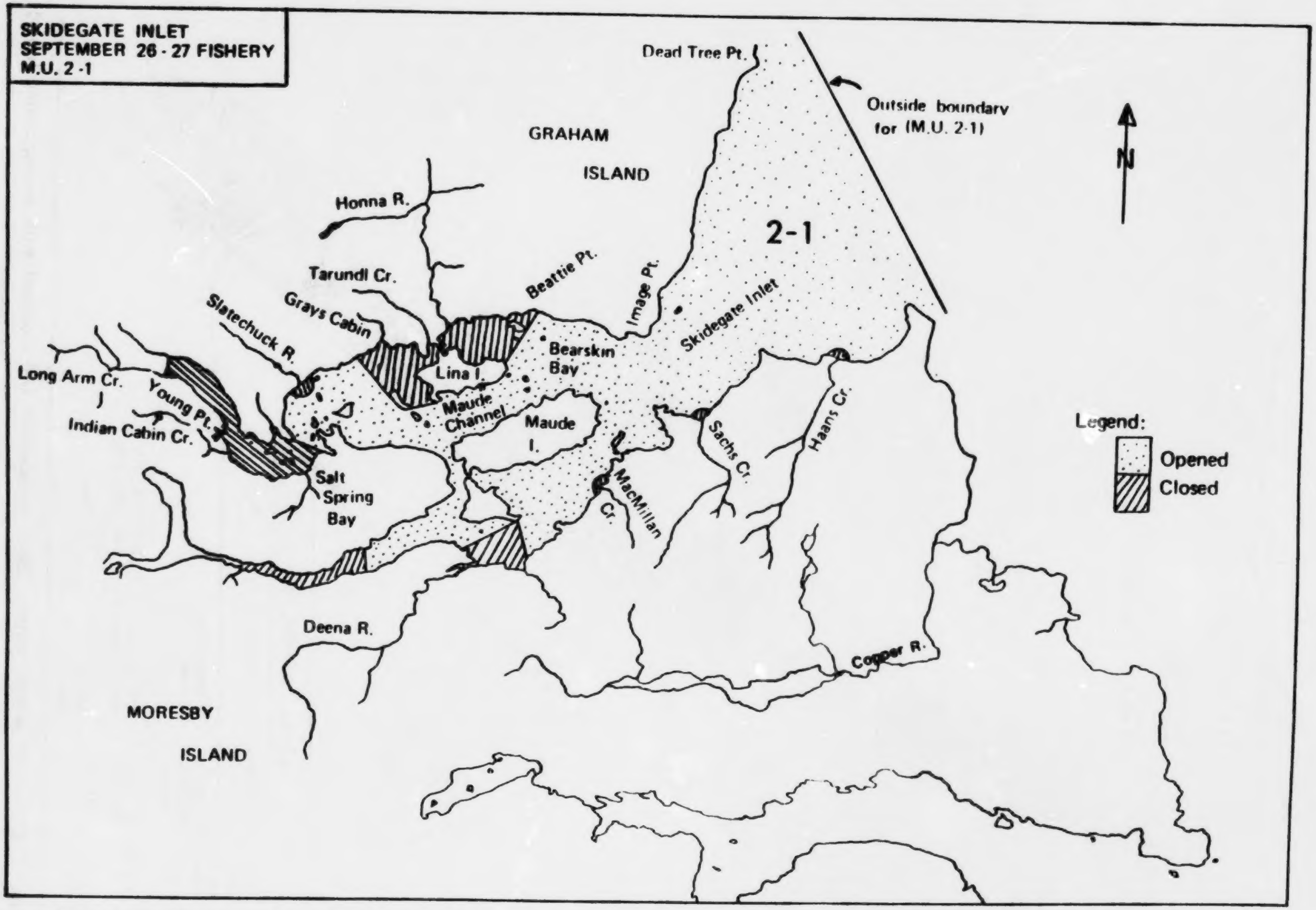

SKIDEGATE INLET
SEPTEMBER 26 - 27 FISHERY
M.U. 2-1
Dead Tree Pt.
Outside boundary for (M.U. 2-1)
N
GRAHAM
ISLAND
2-1
Honna R.
Tarundl Cr.
Beattie Pt.
Image Pt.
Skidegate Inlet
Grays Cabin
Slatechuck R.
Bearskin Bay
Lina I.
Long Arm Cr.
Young Pt.
Maude Channel
Maude I.
Indian Cabin Cr.
Sachs Cr.
Haans Cr.
Salt Spring Bay
MacMillan Cr.
Legend:
Opened
Closed
Deena R.
Copper R.
MORESBY
ISLAND

Fig. 12. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Skidegate Inlet (M.U. 2-1) during the September 26-27 fishery.

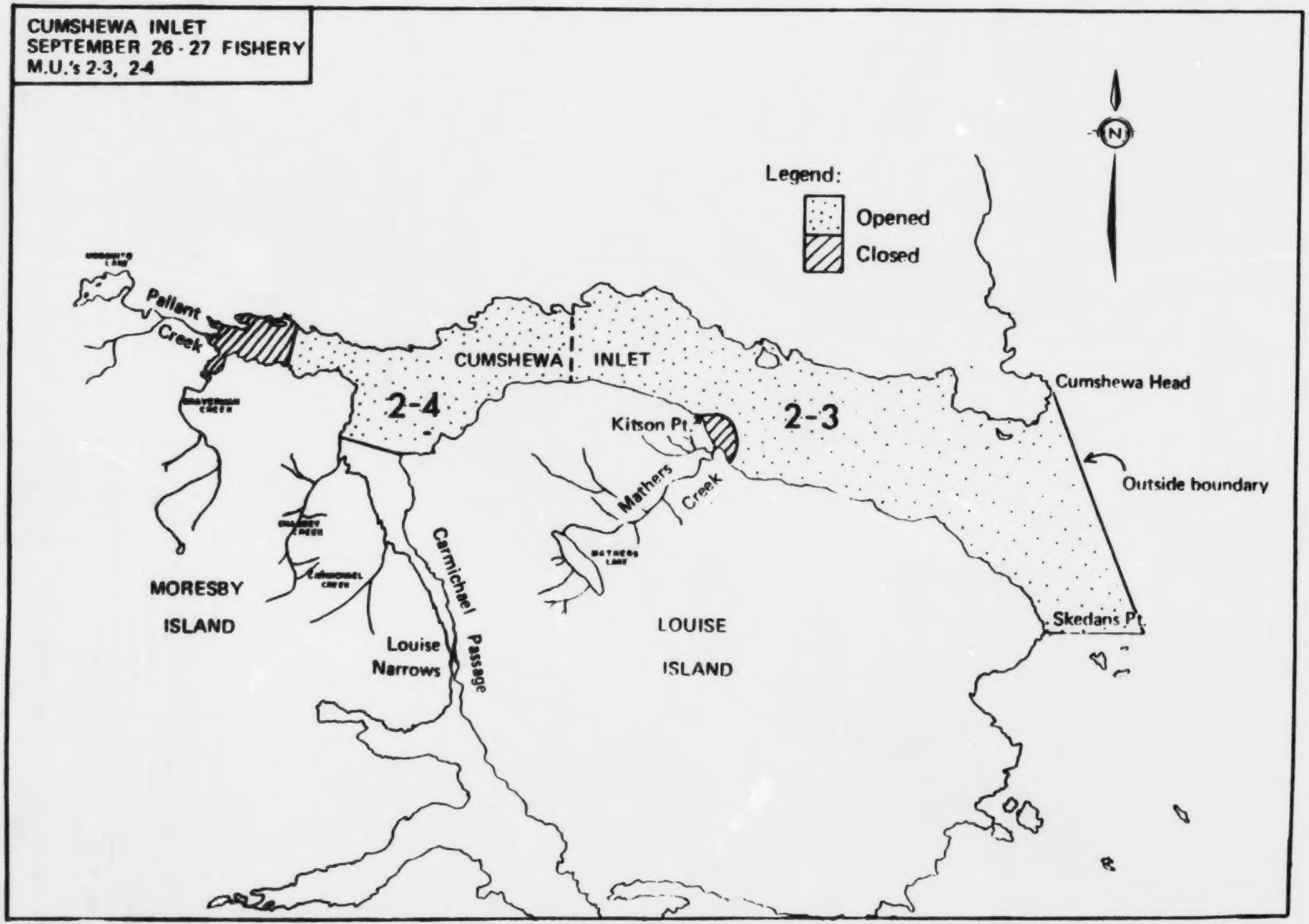
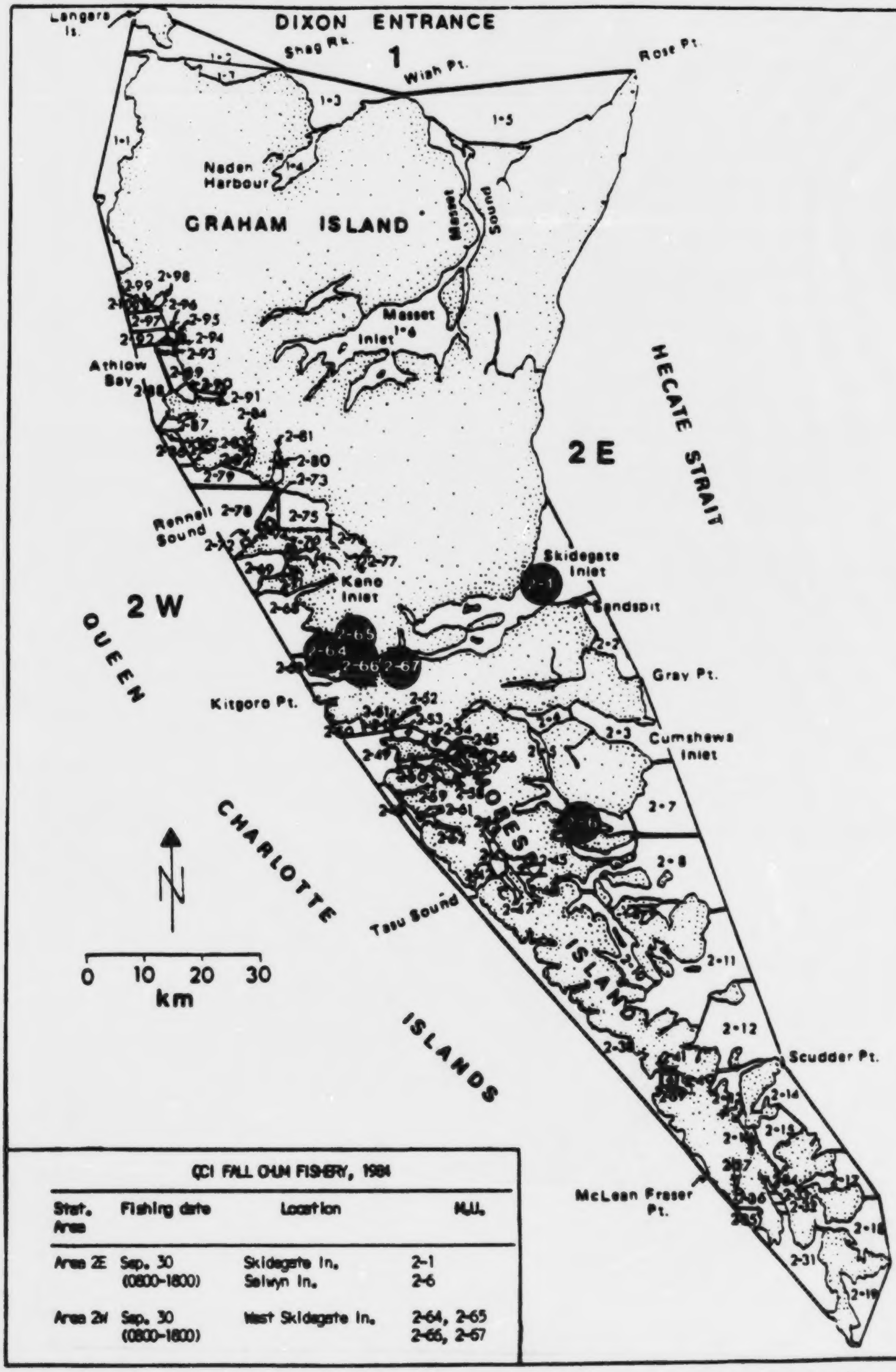

CUMSHEWA INLET
SEPTEMBER 26 - 27 FISHERY
M.U.'s 2-3, 2-4
Legend:
Opened
Closed
N
Pallant Creek
CUMSHEWA INLET
2-4
2-3
Kitson Pt.
Mathers Creek
Cumshewa Head
Outside boundary
Skedans Pt.
MORESBY ISLAND
LOUISE ISLAND
Carmichael Passage
Louise Narrows

Fig. 13. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Cumshewa Inlet (M.U.'s 2-3, 2-4) during the September 26-27 fishery.


DIXON ENTRANCE
Langara Is.
Shag Rk.
1
Wiah Pt.
Rose Pt.
1-3
1-5
1-1
1-4
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
1-6
HECATE STRAIT
2 E
2 W
Athlow Bay
2-98
2-99
2-96
2-97
2-95
2-94
2-93
2-92
2-89
2-88
2-90
2-91
2-84
2-87
2-81
2-80
2-73
2-79
Rennell Sound
2-78
2-75
2-72
2-70
2-76
2-77
2-69
2-68
Kano Inlet
Skidegate Inlet
2-1
Sandspit
2-65
2-64
2-66
2-67
2-2
Gray Pt.
Kitgoro Pt.
2-62
2-61
2-53
2-4
2-3
Cumshewa Inlet
2-5
2-56
2-55
2-47
2-57
2-61
2-6
2-7
2-52
2-8
2-45
2-27
2-11
Tasu Sound
QUEEN CHARLOTTE ISLANDS
MORESBY ISLAND
N
0
10
20
30
km
2-12
2-38
Scudder Pt.
2-14
2-15
2-37
2-36
2-35
2-32
McLean Fraser Pt.
2-18
2-31
Lyman Pt.
2-19

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 2E	Sep. 30 (0800-1800)	Skidegate In. Selwyn In.	2-1 2-6
Area 2W	Sep. 30 (0800-1800)	West Skidegate In.	2-64, 2-65 2-66, 2-67

Fig. 14. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the September 30 fishery.

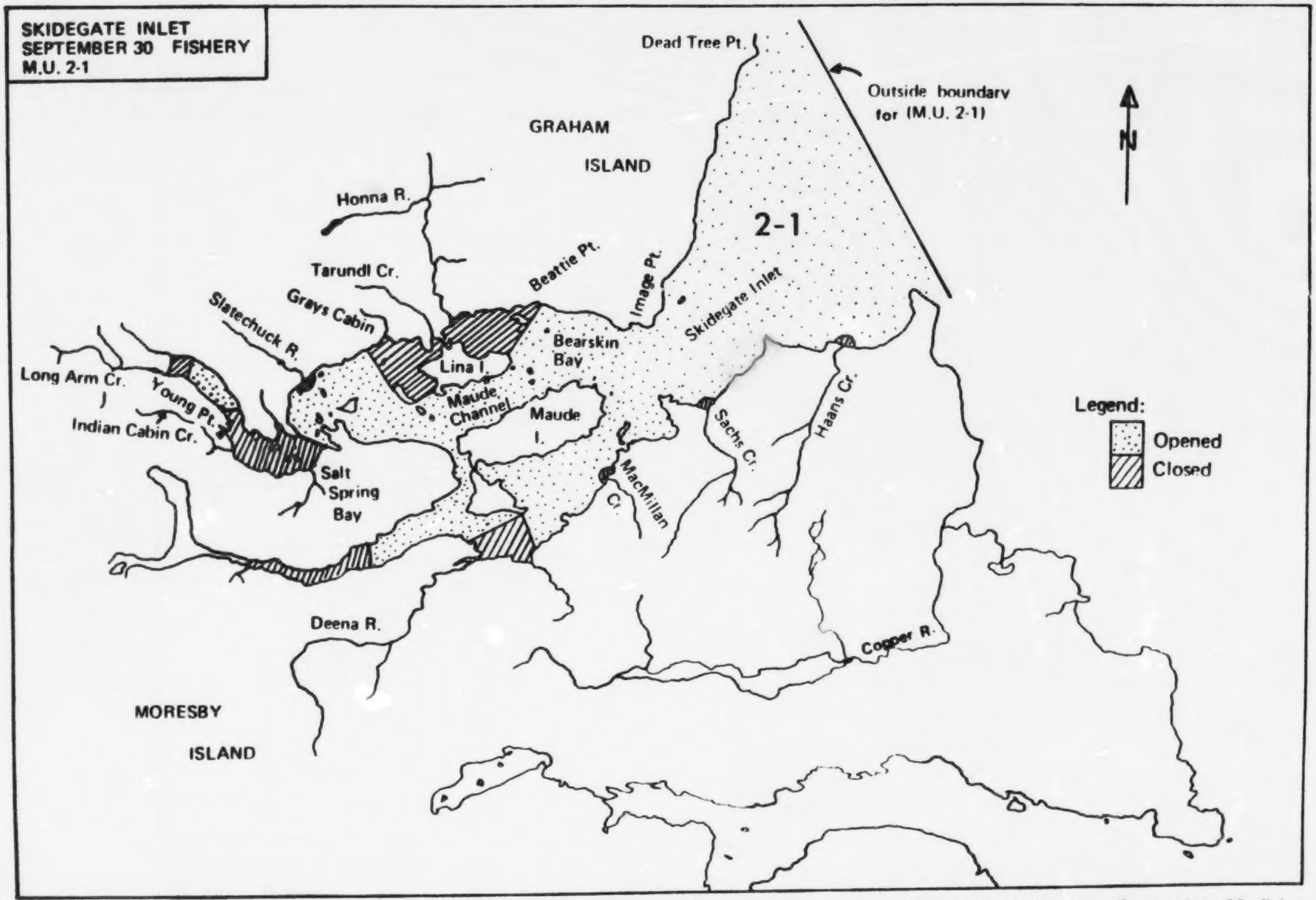

SKIDEGATE INLET
SEPTEMBER 30 FISHERY
M.U. 2-1
Dead Tree Pt.
Outside boundary for (M.U. 2-1)
N
GRAHAM ISLAND
Honna R.
Tarundl Cr.
Grays Cabin
Slatechuck R.
Beattie Pt.
Image Pt.
2-1
Skidegate Inlet
Bearskin Bay
Lina I.
Maude Channel
Maude I.
Long Arm Cr.
Young Pt.
Indian Cabin Cr.
Salt Spring Bay
MacMillan Cr.
Sachs Cr.
Haans Cr.
Legend:
Opened
Closed
Deena R.
Copper R.
MORESBY ISLAND

Fig. 15. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Skidegate Inlet (M.U. 2-1) during the September 30 fishery.

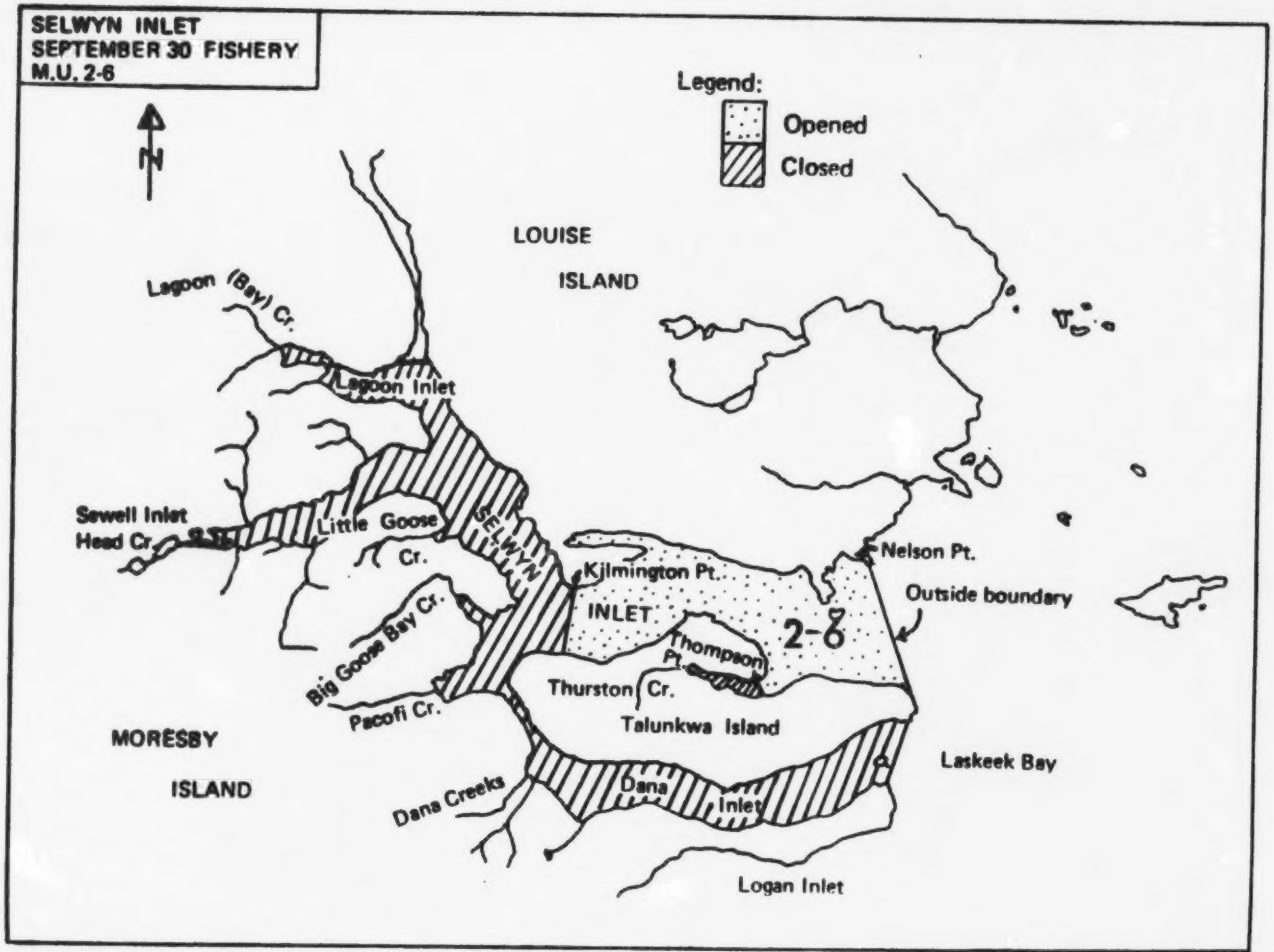
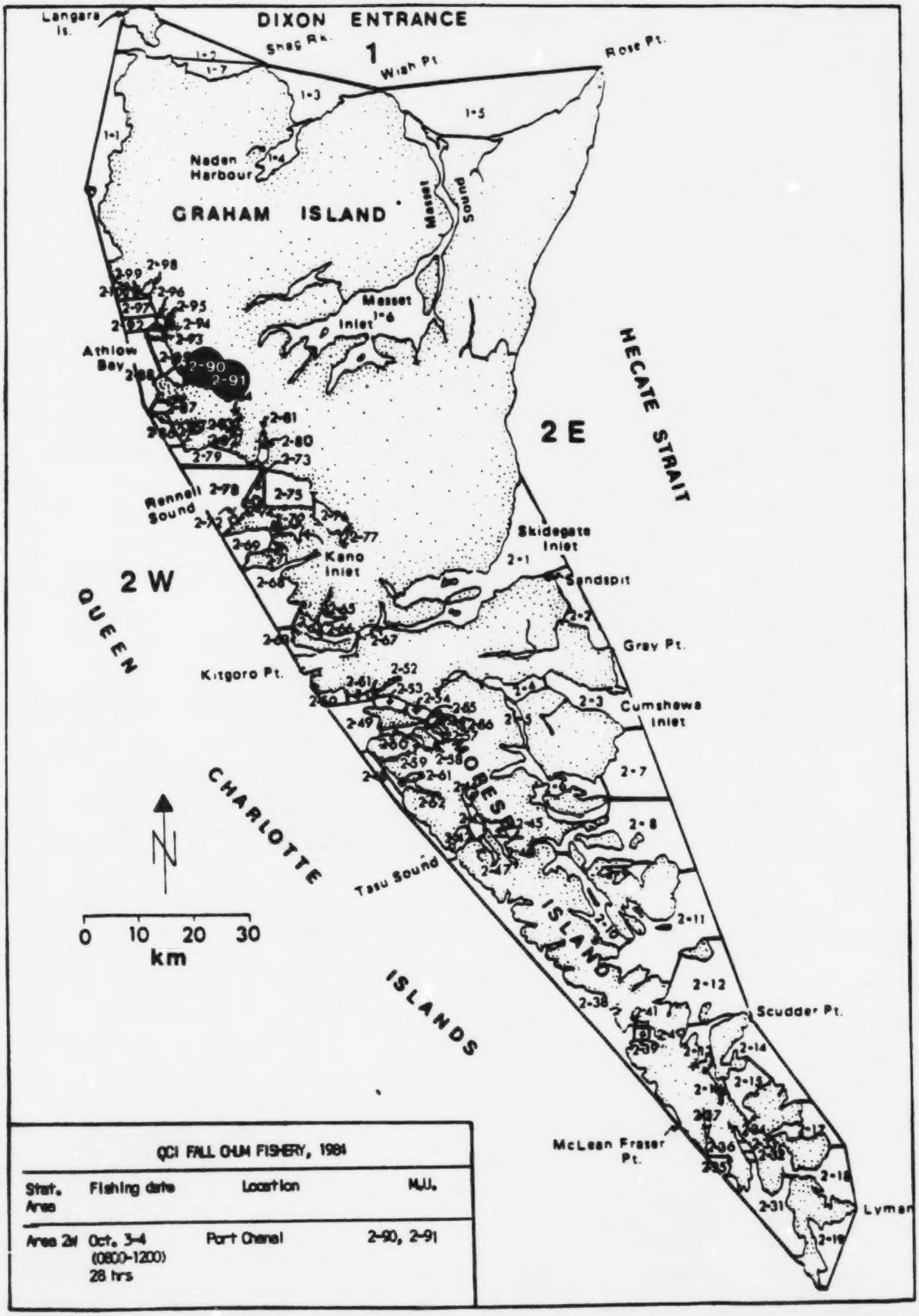

SELWYN INLET
SEPTEMBER 30 FISHERY
M.U. 2-6
N
Legend:
Opened
Closed
LOUISE
ISLAND
Lagoon (Bay) Cr.
Lagoon Inlet
Sewell Inlet
Head Cr.
Little Goose
Cr.
SELWYN
Kilmington Pt.
INLET
Big Goose Bay Cr.
Pacofi Cr.
Thompson
Pt.
2-6
Nelson Pt.
Outside boundary
Thurston Cr.
Talunkwa Island
MORESBY
ISLAND
Dana Creeks
Dana
Inlet
Laskeek Bay
Logan Inlet

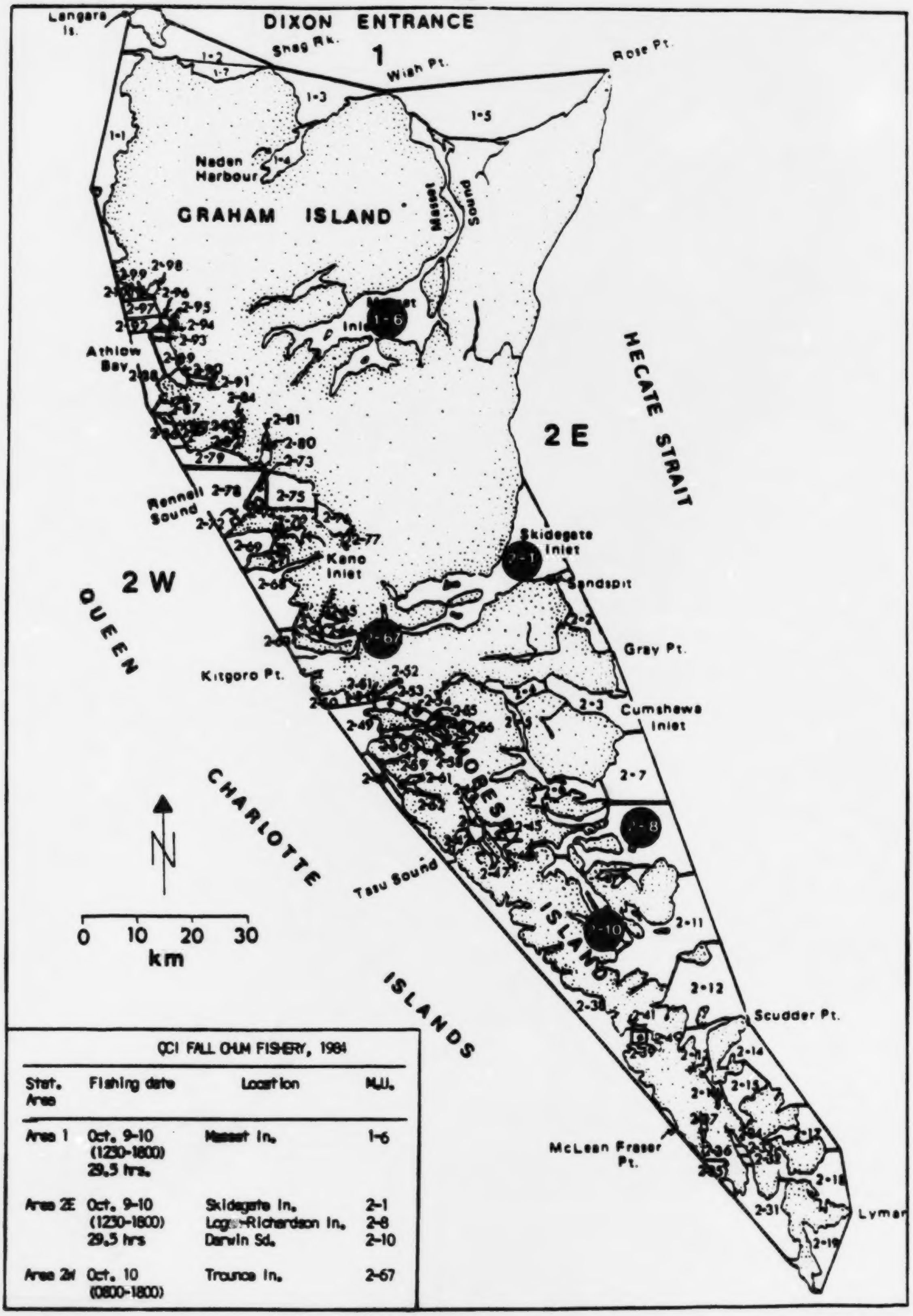
Fig. 16. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Selwyn Inlet (M.U. 2-6) during the September 30 fishery.


DIXON ENTRANCE
Langara Is.
Shag Rk.
1
Wiah Pt.
Rose Pt.
1-2
1-7
1-3
1-5
1-1
1-4
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
1-6
HECATE STRAIT
2 E
2-99
2-98
2-96
2-95
2-97
2-94
2-92
2-93
Athlow Bay
2-90
2-91
2-81
2-80
2-79
2-73
Rennell Sound
2-78
2-75
2-72
2-77
2-69
Kano Inlet
2-68
Skidegate Inlet
2-1
Sandspit
2 W
QUEEN CHARLOTTE ISLANDS
2-67
Gray Pt.
Kitgoro Pt.
2-52
2-53
2-50
2-49
2-54
2-65
2-66
2-4
2-3
Cumshewa Inlet
2-59
2-58
2-61
2-62
2-7
2-8
MORESBY ISLAND
2-45
2-47
Tasu Sound
2-11
2-12
2-38
2-41
Scudder Pt.
2-39
2-14
2-15
2-37
2-36
2-35
McLean Fraser Pt.
2-18
2-31
Lyman Pt.
2-19
N
0
10
20
30
km

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 2W	Oct. 3-4 (0800-1200) 28 hrs	Port Chanal	2-90, 2-91

Fig. 17. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the October 3 - 4 fishery.


DIXON ENTRANCE
Langara Is.
Shag Rk.
1
Wiah Pt.
Rose Pt.
1-2
1-7
1-3
1-5
1-1
1-4
Naden Harbour
GRAHAM ISLAND
Masset
Sound
Masset Inlet
1-6
HECATE STRAIT
2E
2W
Athlow Bay
2-98
2-99
2-96
2-97
2-95
2-94
2-93
2-89
2-90
2-91
2-84
2-87
2-81
2-80
2-73
2-79
Rennell Sound
2-78
2-75
2-72
2-77
2-69
Kano Inlet
2-68
Skidegate Inlet
2-1
Sandspit
2-2
2-65
2-67
2-60
Gray Pt.
Kitgoro Pt.
2-52
2-61
2-53
2-50
2-4
2-3
Cumshewa Inlet
2-49
2-5
2-7
2-8
2-45
2-47
Tasu Sound
2-11
2-10
2-12
2-38
Scudder Pt.
2-39
2-14
2-13
McLean Fraser Pt.
2-37
2-36
2-35
2-17
2-33
2-18
2-31
2-19
Lyman Pt.
QUEEN CHARLOTTE ISLANDS
MORESBY ISLAND
N
0 10 20 30
km

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 1	Oct. 9-10 (1230-1800) 29.5 hrs.	Masset In.	1-6
Area 2E	Oct. 9-10 (1230-1800) 29.5 hrs	Skidegate In. Log[illegible]-Richardson In. Darwin Sd.	2-1 2-8 2-10
Area 2W	Oct. 10 (0800-1800)	Trounce In.	2-67

Fig. 18. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the October 9 -10 fishery.

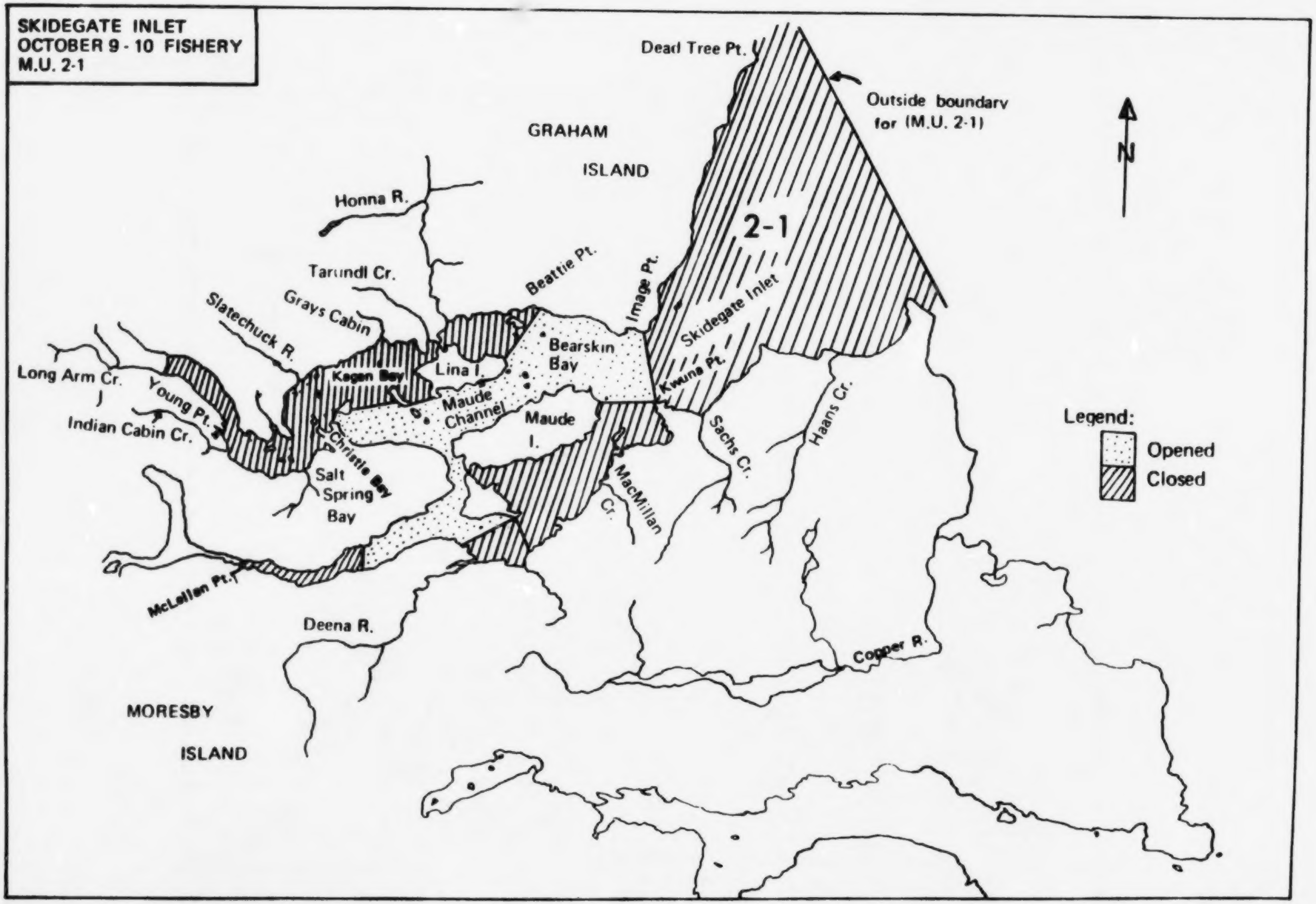

SKIDEGATE INLET
OCTOBER 9 - 10 FISHERY
M.U. 2-1
Dead Tree Pt.
Outside boundary for (M.U. 2-1)
N
GRAHAM
ISLAND
2-1
Honna R.
Tarundl Cr.
Beattie Pt.
Image Pt.
Skidegate Inlet
Grays Cabin
Slatechuck R.
Bearskin Bay
Lina I.
Kagan Bay
Kwuna Pt.
Long Arm Cr.
Young Pt.
Maude Channel
Maude I.
Indian Cabin Cr.
Christie Bay
Salt Spring Bay
MacMillan Cr.
Sachs Cr.
Haans Cr.
Legend:
Opened
Closed
McLellan Pt.
Deena R.
Copper R.
MORESBY
ISLAND

Fig. 19. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Skidegate Inlet (M.U. 2-1) during the October 9-10 fishery.

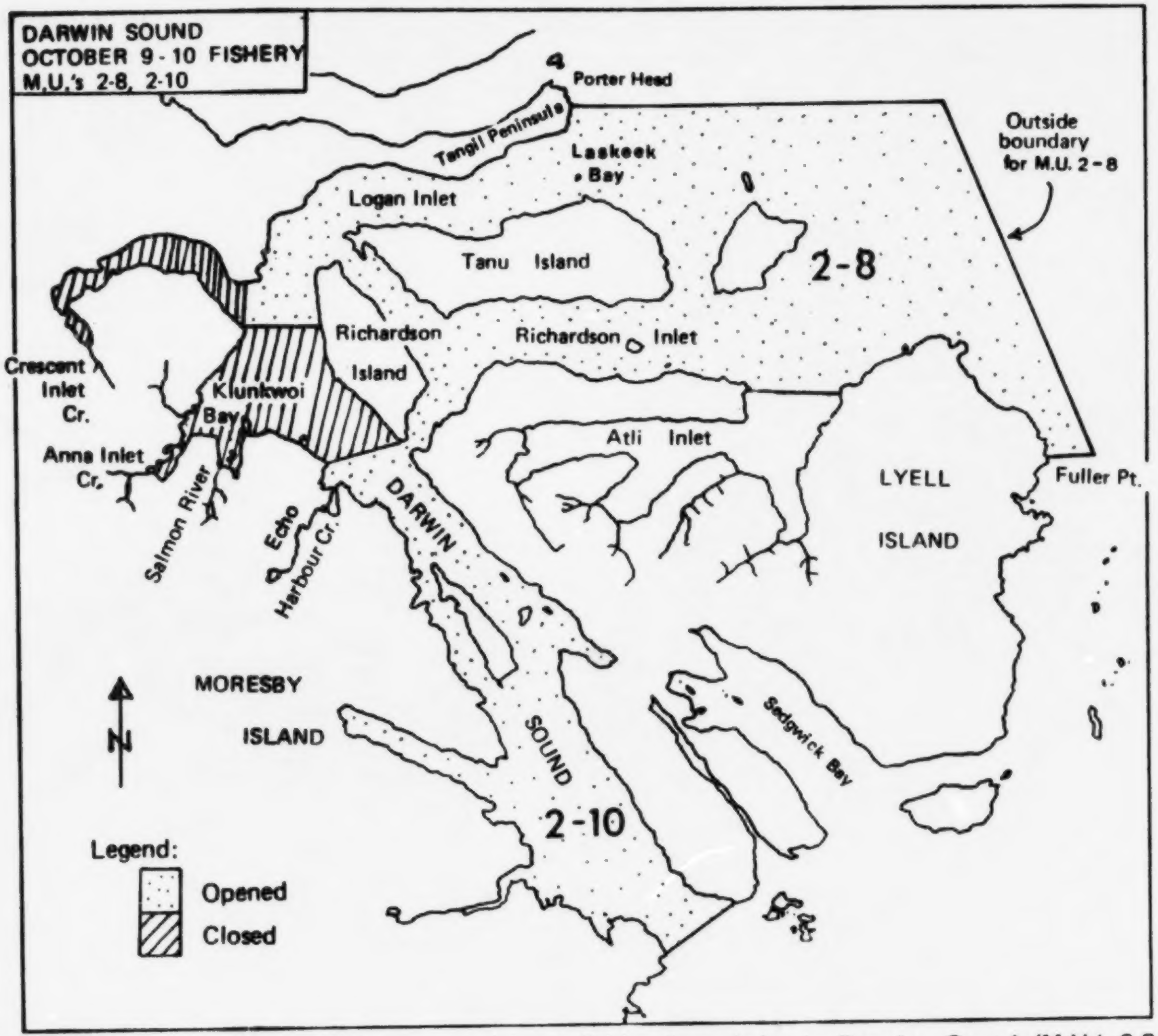
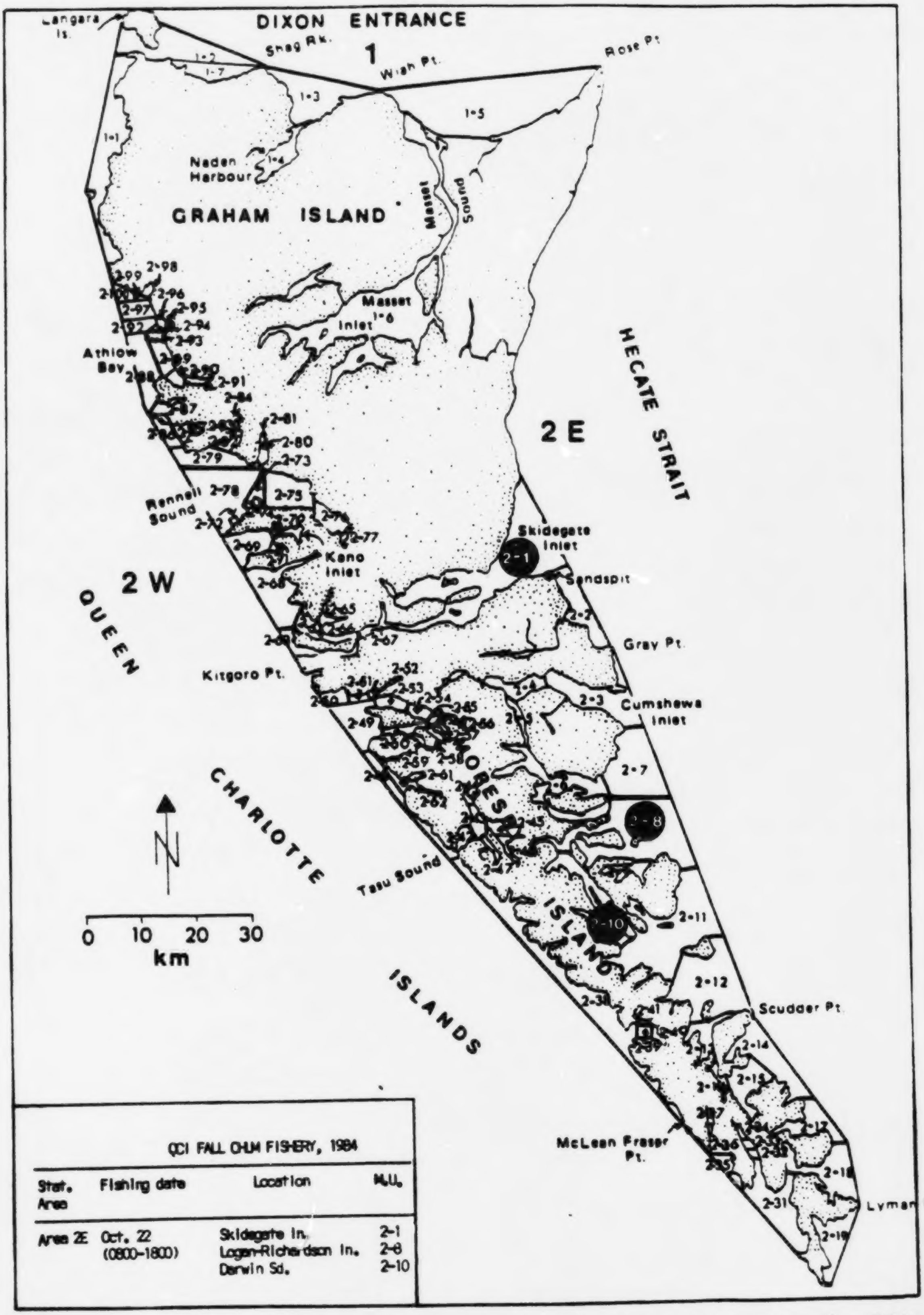

DARWIN SOUND
OCTOBER 9 - 10 FISHERY
M.U.'s 2-8, 2-10
Porter Head
Tangil Peninsula
Laskeek Bay
Outside boundary for M.U. 2 - 8
Logan Inlet
Tanu Island
2-8
Richardson Island
Richardson Inlet
Crescent Inlet Cr.
Klunkwoi Bay
Anna Inlet Cr.
Salmon River
Echo Harbour Cr.
Atli Inlet
LYELL ISLAND
Fuller Pt.
DARWIN
SOUND
2-10
Sedgwick Bay
MORESBY ISLAND
N
Legend:
Opened
Closed

Fig. 20. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Darwin Sound (M.U.'s 2-8, 2-10) during the October 9-10 fishery.


DIXON ENTRANCE
Langara Is.
Shag Rk.
1
Wiah Pt.
Rose Pt.
1-2
1-7
1-3
1-5
1-1
1-4
Naden Harbour
GRAHAM ISLAND
Masset Sound
Masset Inlet
1-6
HECATE STRAIT
2 E
2 W
QUEEN CHARLOTTE ISLANDS
MORESBY ISLAND
Athlow Bay
Rennell Sound
Kano Inlet
Skidegate Inlet
Sandspit
Gray Pt.
Kitgoro Pt.
Cumshewa Inlet
Tasu Sound
Scudder Pt.
McLean Fraser Pt.
Lyman Pt.
2-1
2-2
2-3
2-4
2-7
2-8
2-10
2-11
2-12
2-14
2-18
2-19
2-31
2-36
2-47
2-49
2-52
2-53
2-54
2-59
2-60
2-61
2-62
2-65
2-67
2-68
2-69
2-72
2-73
2-75
2-77
2-78
2-79
2-80
2-81
2-87
2-89
2-90
2-91
2-92
2-93
2-94
2-95
2-96
2-97
2-98
2-99
0
10
20
30
km
N

QCI FALL CHUM FISHERY, 1984

Stat. Area	Fishing date	Location	M.U.
Area 2E	Oct. 22 (0800-1800)	Skidegate In. Logan-Richardson In. Darwin Sd.	2-1 2-8 2-10

Fig. 21. QCI chum salmon fishery, 1984: Management Units opened with corresponding fishing times and geographic locations during the October 22 fishery.

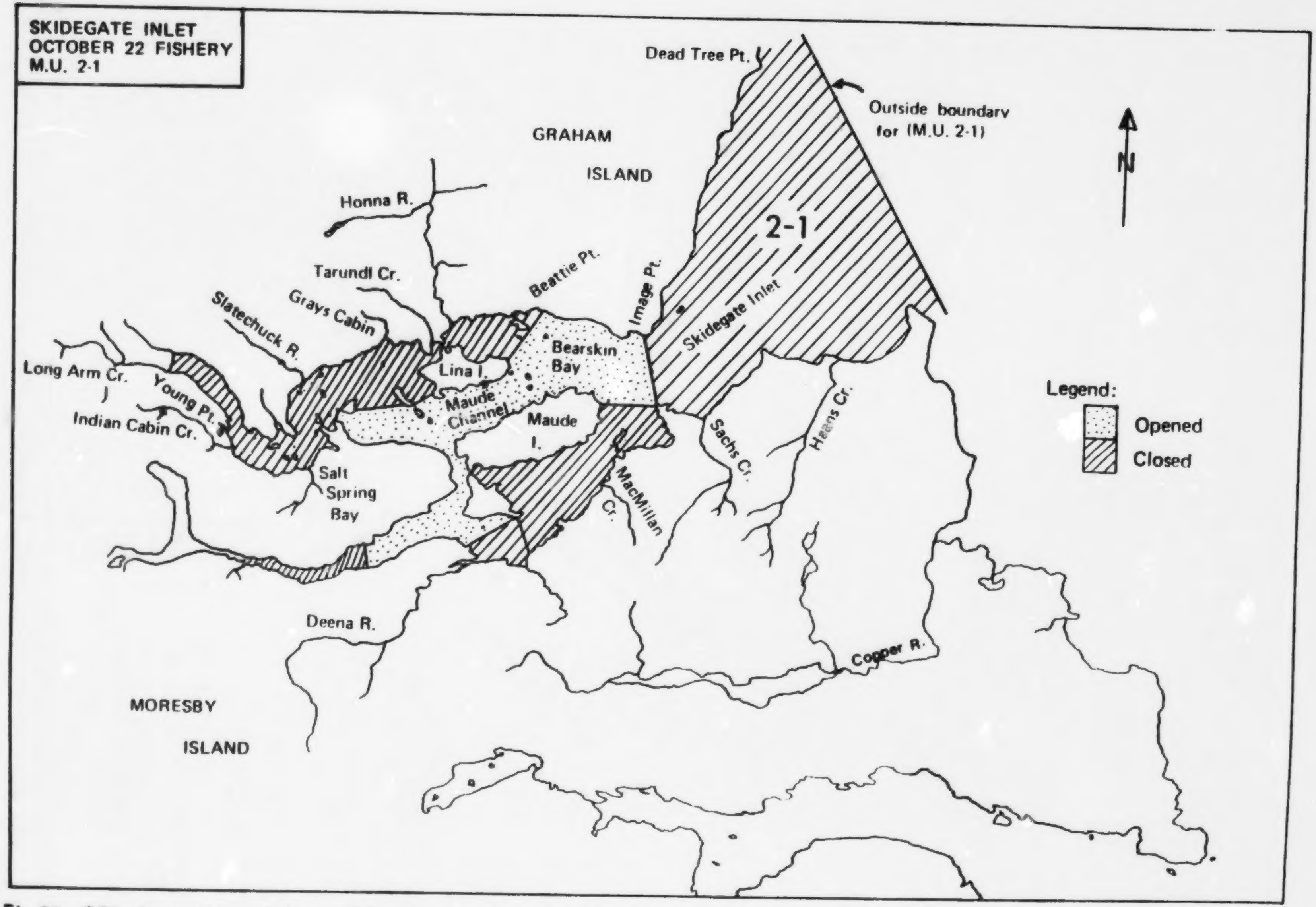

SKIDEGATE INLET
OCTOBER 22 FISHERY
M.U. 2-1
Dead Tree Pt.
Outside boundary for (M.U. 2-1)
GRAHAM
ISLAND
2-1
Skidegate Inlet
Image Pt.
Beattie Pt.
Honna R.
Tarundl Cr.
Grays Cabin
Slatechuck R.
Long Arm Cr.
Young Pt.
Indian Cabin Cr.
Lina I.
Bearskin Bay
Maude Channel
Maude I.
Salt Spring Bay
MacMillan Cr.
Sachs Cr.
Haans Cr.
Legend:
▨ Opened
▨ Closed
N
Deena R.
Copper R.
MORESBY
ISLAND

Fig. 22. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Skidegate Inlet (M.U. 2-1) during the October 22 fishery.

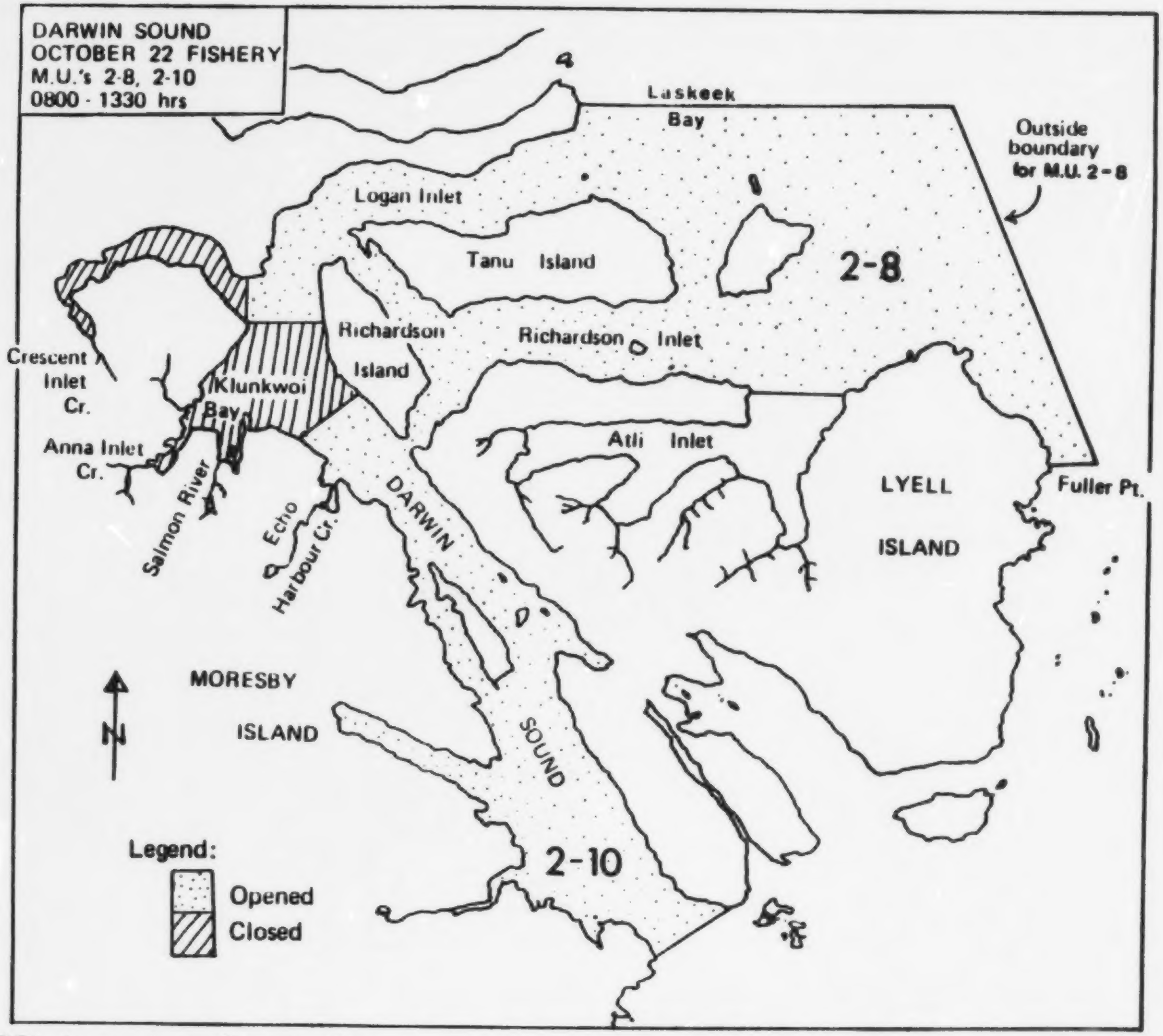

DARWIN SOUND
OCTOBER 22 FISHERY
M.U.'s 2-8, 2-10
0800 - 1330 hrs
Laskeek Bay
Outside boundary for M.U. 2-8
Logan Inlet
Tanu Island
2-8
Richardson Island
Richardson Inlet
Crescent Inlet Cr.
Klunkwoi Bay
Anna Inlet Cr.
Salmon River
Echo Harbour Cr.
Atli Inlet
LYELL ISLAND
Fuller Pt.
DARWIN SOUND
MORESBY ISLAND
N
2-10
Legend:
Opened
Closed

Fig. 23a. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Darwin Sound (M.U.'s 2-8, 2-10) with corresponding fishing times during the October 22 fishery (0800 - 1330 hrs).

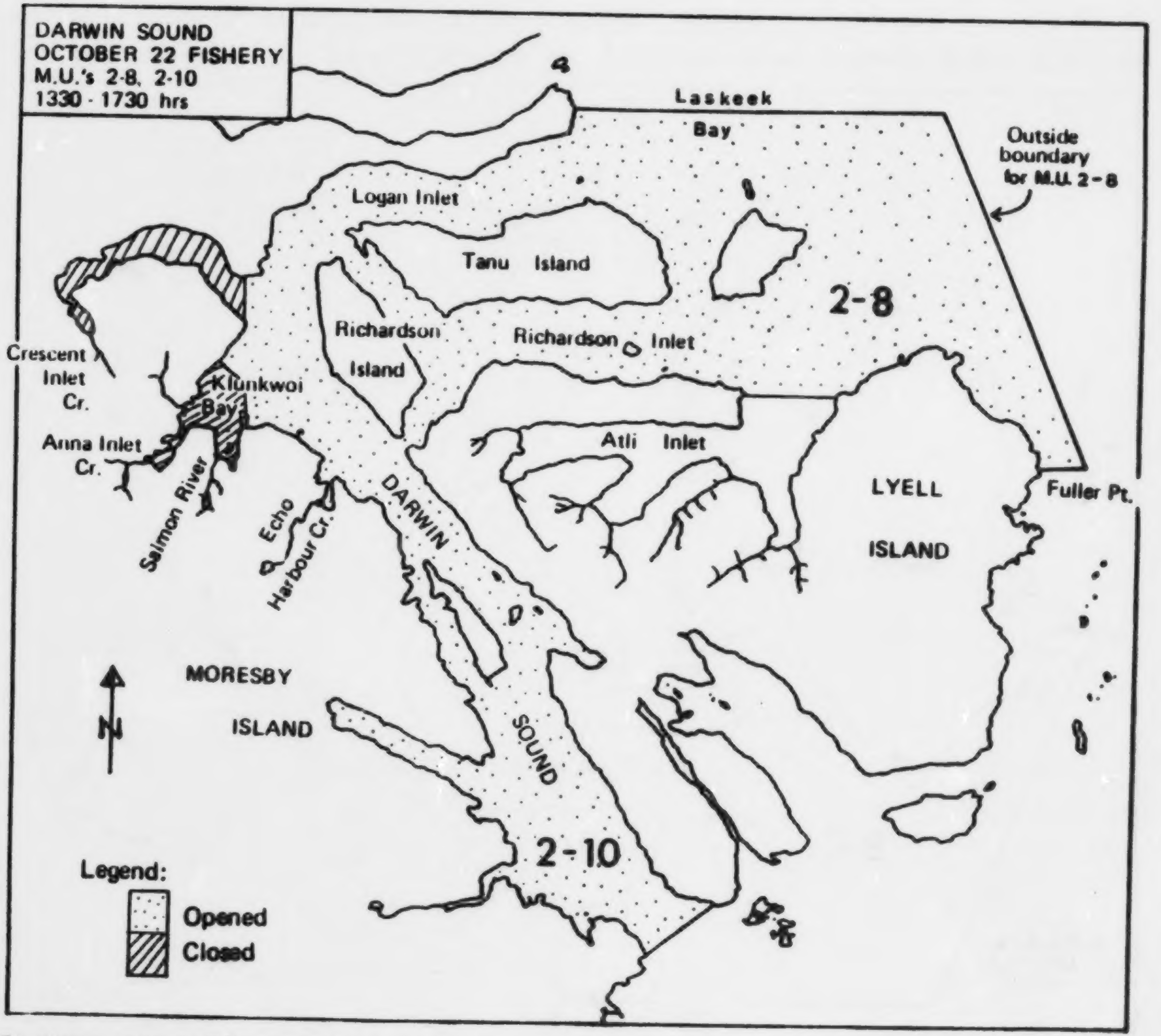

DARWIN SOUND
OCTOBER 22 FISHERY
M.U.'s 2-8, 2-10
1330 - 1730 hrs
Laskeek
Bay
Outside boundary for M.U. 2-8
Logan Inlet
Tanu Island
2-8
Richardson Island
Richardson Inlet
Crescent Inlet Cr.
Klunkwoi Bay
Anna Inlet Cr.
Salmon River
Echo Harbour Cr.
Atli Inlet
LYELL ISLAND
Fuller Pt.
DARWIN
SOUND
MORESBY ISLAND
N
2-10
Legend:
Opened
Closed

Fig. 23b. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Darwin Sound (M.U.'s 2-8, 2-10) with corresponding fishing times during the October 22 fishery (1330 - 1730 hrs).

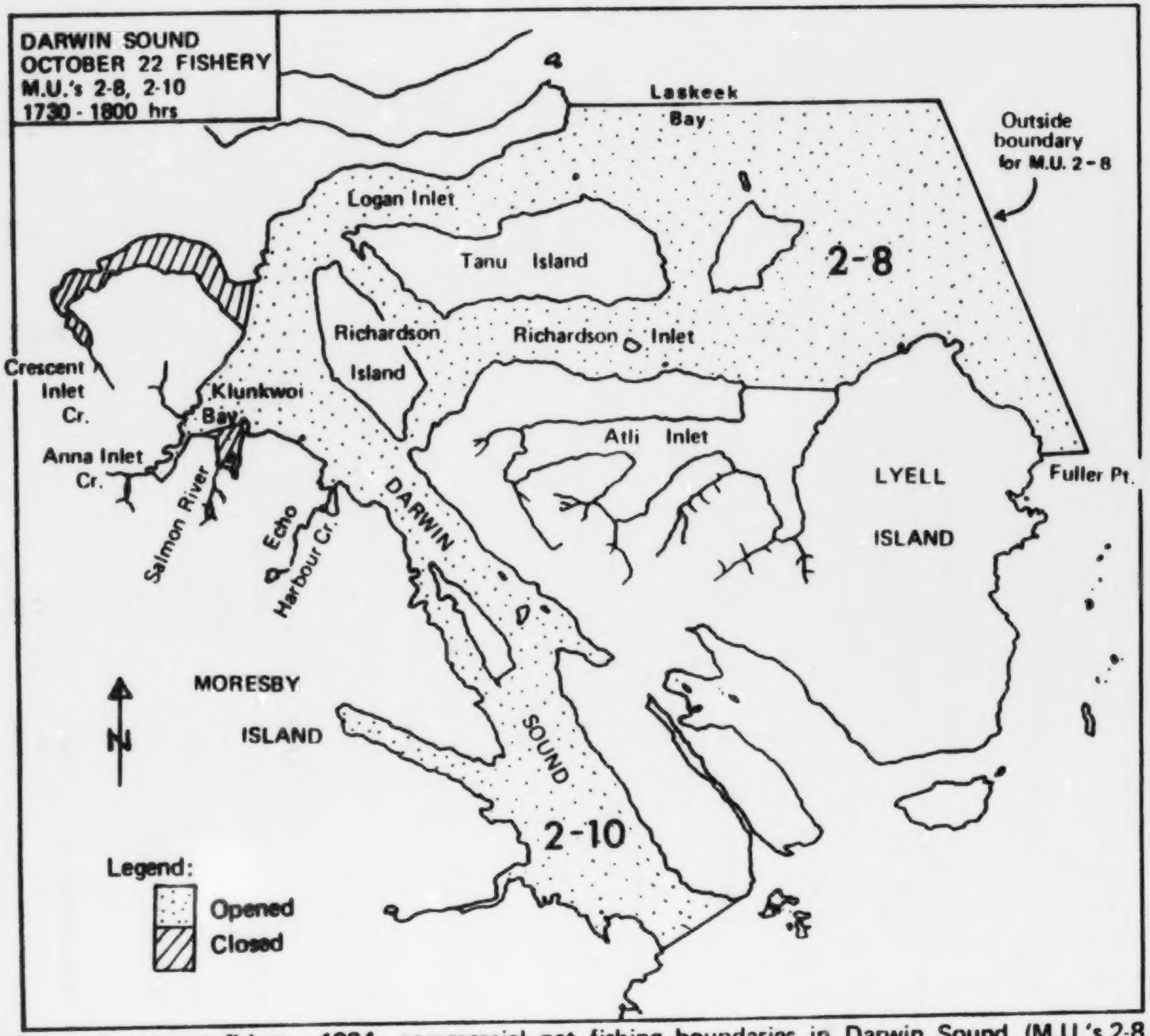

DARWIN SOUND
OCTOBER 22 FISHERY
M.U.'s 2-8, 2-10
1730 - 1800 hrs
Laskeek Bay
Outside boundary for M.U. 2 - 8
Logan Inlet
Tanu Island
2-8
Richardson Island
Richardson Inlet
Crescent Inlet Cr.
Klunkwoi Bay
Anna Inlet Cr.
Salmon River
Echo Harbour Cr.
Atli Inlet
LYELL ISLAND
Fuller Pt.
DARWIN
SOUND
2-10
MORESBY ISLAND
N
Legend:
Opened
Closed

Fig. 23c. QCI chum salmon fishery, 1984: commercial net fishing boundaries in Darwin Sound (M.U.'s 2-8, 2-10) with corresponding fishing times during October 22 fishery (1730 - 1800 hrs).

Table 11. Weekly sales slip catches of salmon during QCI chum salmon net fishery, September 16 - October 22, 1984.

AREA 1 SALMON CATCH BY SPECIES

Week	Gear	Chinook	Sockeye	Coho	Pink	Chum
Oct 7-13	Gn	1		3		67
	Sn					
Total		1		3		67

AREA 2E SALMON CATCH BY SPECIES

Week	Gear	Chinook	Sockeye	Coho	Pink	Chum
Sept 16-Sept 22	Gn	1		225	40	18276
	Sn		5	154	884	16022
	net	1	5	379	924	34298
Sept 23-Sept 29	Gn	3	41	649	83	20122
	Sn		1	639	637	87253
	net	3	42	1288	720	107375
Sept 30-Oct 6	Gn		4	485	1	12186
	Sn		9	394	3	28824
	net		13	879	4	41010
Oct 7-Oct 13	Gn		1	800	13127	13928
	Sn		5	417	42208	42630
	net		6	1217	55335	56558
Oct 21-Oct 27	Gn			3		1279
	Sn			16		39013
	net			19		40292
Total		4	66	3782	56983	279533

AREA 2W SALMON CATCH BY SPECIES

Week	Gear	Chinook	Sockeye	Coho	Pink	Chum
Sept 16-Sept 22	Gn					
	Sn	5	1	416	130	19153
						19153
Sept 23-Sept 29	Gn			29		1249
	Sn	142		920	362	61052
	net	142		949	362	62301
Sept 30-Oct 6	Gn			22		610
	Sn			5		4812
	net			27		5422
Oct 7-Oct 13	Gn					
	Sn			15		1112
	net			15		1112
Total		147	1	1407	492	87988

mouths and in streams through aerial surveys, observation of salmon jumpers from patrol vessels, estimated stream escapement based on foot surveys, run timing data, cumulative fence counts (escapement) of chum in Pallant Creek, test fishing indices and fish quality appraisals in Cumshewa Inlet, scale analysis of the catch, Indian Food Fishery catch indications, catch indications from previous commercial fisheries, mixed stock fishery conflicts, species mix in the catch, abundance appraisals from aerial surveys by Industry pilots and/or commercial fishermen, timing and coordination of fisheries based on stock strength in other QCI inlets, gear levels and fleet distribution, and seasonal fishing opportunities provided to nets in the North Coast.

Highlights in the fishing summary are noted chronologically below for Skidegate, Tasu and Cumshewa Inlets and for Darwin Sound:

Skidegate Inlet,
September 16-17
(Figs. 8 & 9)

An observed lower productivity of early run Skidegate Inlet stocks (Deena, Honna, Tarundl) relative to the majority of late run stocks (Lagins, Slatechuck, Indian Cabin) caused a delay in the Skidegate Inlet fishery until after the middle of September, by which time 75% of the early run stocks were estimated to have escaped. Concern for early run stocks which did not attain optimum escapement caused a conservative approach to fisheries, with boundary modifications designed to minimize the bicatch of the tail-end of this early run.

Tasu Sound,
September 23
(Fig. 10)

Assessment indications of a chum salmon surplus of relatively high quality (silver or semi-bright fish) prompted spontaneous initiation of a fishery in Tasu Sound despite fleet distribution concerns. Although no other QCI inlets were open to chum salmon fishing at this time, the Tasu opening was coordinated with a fishery in Area 7, Spiller Channel. Rapid quality deterioration of terminal area chum salmon was avoided by this timely fishery, and catches were good, totalling approximately 32,000 chum salmon for the 12-hour opening.

Skidegate Inlet,
September 26-27
(Figs. 11 & 12)

Chum assessment indications prior to this fishery were reviewed September 21 at a management meeting when it was decided to delay chum fishing in Skidegate Inlet for a few more days for the following reasons:

-poor escapement to date of chum salmon to Lagins Creek, the dominant late run stock, and little indication of chum salmon in Long Inlet
-the chum salmon showing outside the inlet where stock composition was mixed and less well known was relatively good as indicated by Indian Food Fishery sets; however, no build up of chum was yet apparent inside the inlet, although this was anticipated in a few more days (Appendix 7)
-coincident build up of chum was also anticipated in Cumshewa Inlet, West Skidegate, Trounce, and

possibly Selwyn Inlets in a few more days, as well as additional Area 2W inlets; fisheries management rationale was to coordinate the major chum fishery on the islands in the next opening, thus optimizing fleet distribution and harvesting strategies.

(Note: fishermen protested this rationale by fishing illegally in Skidegate Inlet on September 24; they felt that Skidegate Inlet should have opened sooner. However, fisheries management decisions were maintained due to stock concerns for Lagins Creek chum salmon early in the run and the need to coordinate fisheries in multiple areas)

Approximately 58,000 chum salmon were harvested during the September 26-27 opening by approximately 20 seines and 70 gillnets.

Cumshewa Inlet,
September 26-27
(Figs. 11 & 13)

Gillnet test fishing CPUE indices indicated an influx of fresh fish in relatively silver or semi-bright condition and of increased abundance just prior to this fishery. In addition, run timing data and cumulative fence counts of chum salmon in Pallant Creek provided a projected terminal area stock estimate of 75,000 salmon, considerably more than the 30,000 spawning requirement. Concern for Mathers Creek chum salmon which were expected to return at a much lower rate than the Pallant Creek stock necessitated boundary adjustments designed to minimize harvest impacts on this weaker stock (Fig. 13, Appendix 6). A moderately large fleet harvested nearly 40,000 chum salmon in the first 12 hours of the fishery and totalled nearly 50,000 chum by the end of the second day. The majority of salmon were hatchery produced.

Darwin Sound,
October 9-10
(Figs. 18 & 20)

An abundance of chum salmon first observed in Sedgwick Bay and later identified to be aggregating in Darwin Sound prompted a fishery in this area. The fishery followed a cumulative escapement to date in area streams estimated at 12,000 chum salmon or approximately 35% of the optimum escapement. Salmon River, the main chum salmon producer in Darwin Sound, showed good indications of stock strength in the stream, off the creek mouth and in Klunkwoi Bay (Fig. 20). Assessment of the holding body of fish in Darwin Sound was difficult without the use of more quantitative fisheries management techniques such as echosounding and seine test fishing. The fishery drew a substantial fleet which harvested approximately 40,000 chum salmon in 1 1/2 days of fishing.

Darwin Sound,
October 22
(Figs. 21 & 23)

An additional 40,000 chum salmon were harvested in the final QCI fall chum fishery. Fish quality was poor, indicating that these chum had been holding in the area for quite some time, probably since the last fishery.

Difficulty in visually assessing the holding body of fish resulted in a delayed opening and a loss in quality of the catch.

CHUM ESCAPEMENTS

The 1984 escapements of chum salmon to spawning streams that supported a commercial net fishery are listed by Statistical Area, inlet and stream in Table 12; optimum escapements are included for comparison. Figures 24a-k show the corresponding stream locations in each sub-area. In 1984, significant deficiencies in the spawning requirement occurred in the following inlets and associated streams: Athlow Bay-Port Louis (Mace, Mercer; Fig. 24b), Rennell Sound (Kano, Mountain Creek, Seal Inlet, Tartu Head; Fig. 24c), West Skidegate (Government Creek, Dawson Harbour; Fig. 24d), Englefield Bay (Inskip, Peel Head #1, Security; Fig. 24e), Tasu Sound (Botany Head; Fig. 24f), Louscoone Inlet (Fig. 24g), Skidegate Inlet (Deena, Honna, Tarundl; Fig. 24h), and Cumshewa Inlet (Mathers Creek; Fig. 24i). Individual areas experienced spawning deficiencies of approximately 25% or greater, with a high of 67% in Englefield Bay.

A more detailed review of the escapement by stream and run timing information for Skidegate Inlet is provided in Table 13. Notably, two runs of chum salmon were apparent, an early run peaking by mid-September in the Deena, Honna and Tarundl systems, and a later run peaking by early October in the remaining streams.

REVIEW OF PAST AND PRESENT QCI CHUM SALMON FISHERIES

The 1984 fall chum fishery on the Queen Charlotte Islands contributed the highest catch and was the most extensive such fishery in over a decade. Assessment of this fishery in terms of historical catch trends, comparison between the pre-season and actual fishing strategies, escapement, stock composition in the catch, management, and fleet control is provided in the following section.

Since 1951, when Area Histories became available as documents of salmon fishing and escapement, chum salmon net fisheries have typically occurred in Area 1 in outside areas and terminal inlets. Chum were harvested during the latter part of the net fishing season which generally lasted from late June until early October. More recently during the 1978 to 1984 time period, salmon fishing has been limited to the late June or mid-July period and extended through to mid-August in outside areas, namely in the vicinity of Langara Island, Pillar Bay and Viragq Sound (Fig. 4). This measure excluded the September-October chum fishing season, in an attempt to increase escapements to levels producing the maximum sustainable yield. Fishing days decreased from 3-4 days/week during the 1950's to mid-1970's, to 2-4 days/week from 1976 to 1978, then finally to 2 days/week since 1979 and more recently to 1- and 2-day openings. Prior to the negligible chum fishery in Masset Inlet in 1984, the last commercial chum net fishery occurred in the area in 1973, although outside areas were open for a short time in interim years (1976 and 1977).

Table 12. Queen Charlotte Islands chum salmon escapements to systems in Areas 1, 2E and 2W that supported a commercial net fishery in 1984 [a].

AREA 1

Inlet/Stream	Chum Escapement	Optimum
Masset Inlet		
Ain	25,000	(20-25,000)
Awun	15,000	(10-15,000)

AREA 2E

Inlet/Stream	Chum Escapement	Optimum
Skidegate Inlet	88,000	(115,000)
Deena	18,850	(30,000)
Tarundl	1,560	(5,000)
Honna	2,100	(10,000)
Lagins	32,550	(25-30,000)
Slatechuck	21,450	(15-20,000)
Indian Cabin	7,610	(9,000)
Salt Spring	1,480	(2,500)
Mud Bay	940	(3,000)
Greys Cabin	500	(1,000)
East Narrows	470	(1,000)
Cumshewa Inlet	33,000	(50,000)
Pallant Creek	32,000	(30,000)
Mathers Creek	1,000	(20,000)
Selwyn Inlet	42,800	(47,500)
Lagoon	16,000	(20,000)
Big Goose	8,600	(7,000)
Thurston	450	(1,500)
Dana #1,#2,#3	2,750	(3,000)
Pacofi	2,500	(3,000)
Little Goose	2,000	(2,500)
Sewell Head	7,600	(6,500)
Darwin Sound	31,500	(32,250)
Salmon River	26,500	(20-25,000)
Crescent	3,700	(6,500)
Echo	5	(300)
Anna Inlet	500	(750)

AREA 2W

Inlet/Stream	Chum Escapement	Optimum
Tasu Sound	13,280	(19,500)
Botany Head	1,250	(5,000)
Botany Outer	2,820	(4,000)
Fairfax	1,150	(1,000)
Flat Creek	850	(1,500)
Tasu Creek	7,000	(7,000)
Athlow/Louis	8,212	(17,800)
Mace	2,500	(5,000)
Mercer	1,000	(5,000)
Nesto	1,900	(2,500)
Steel	2,650	(2,500)
Rennell Sound	9,784	(21,500)
Kano	0	(4,000)
Mountain Creek	800	(2,000)
Seal Inlet	7,000	(10,000)
Tartu Head	350	(2,500)
West Skidegate	9,530	(17,000)
Government Creek	800	(5,000)
Dawson Harbour	350	(1,500)
Trounce Head	5,080	(4,000)
Trounce Right Hand	2,000	(1,500)
Englefield Bay	11,564	(35,500)
MacKenzie Cove	2,000	(1,500)
Gold Harbour	4,000	(1,500)
Inskip	0	(1,500)
Peel Head	2,000	(2,000)
#1	16	(1,500)
#2	2,000	(2,500)
Security Left	600	(15,000)
Security Right	600	(4,000)
Flamingo Inlet	4,200	(4,000)
Louscoone Inlet	3,000	(5,000)

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[a] Totals for each management area reflect the entire area and in all cases only the major contributing rivers are listed.

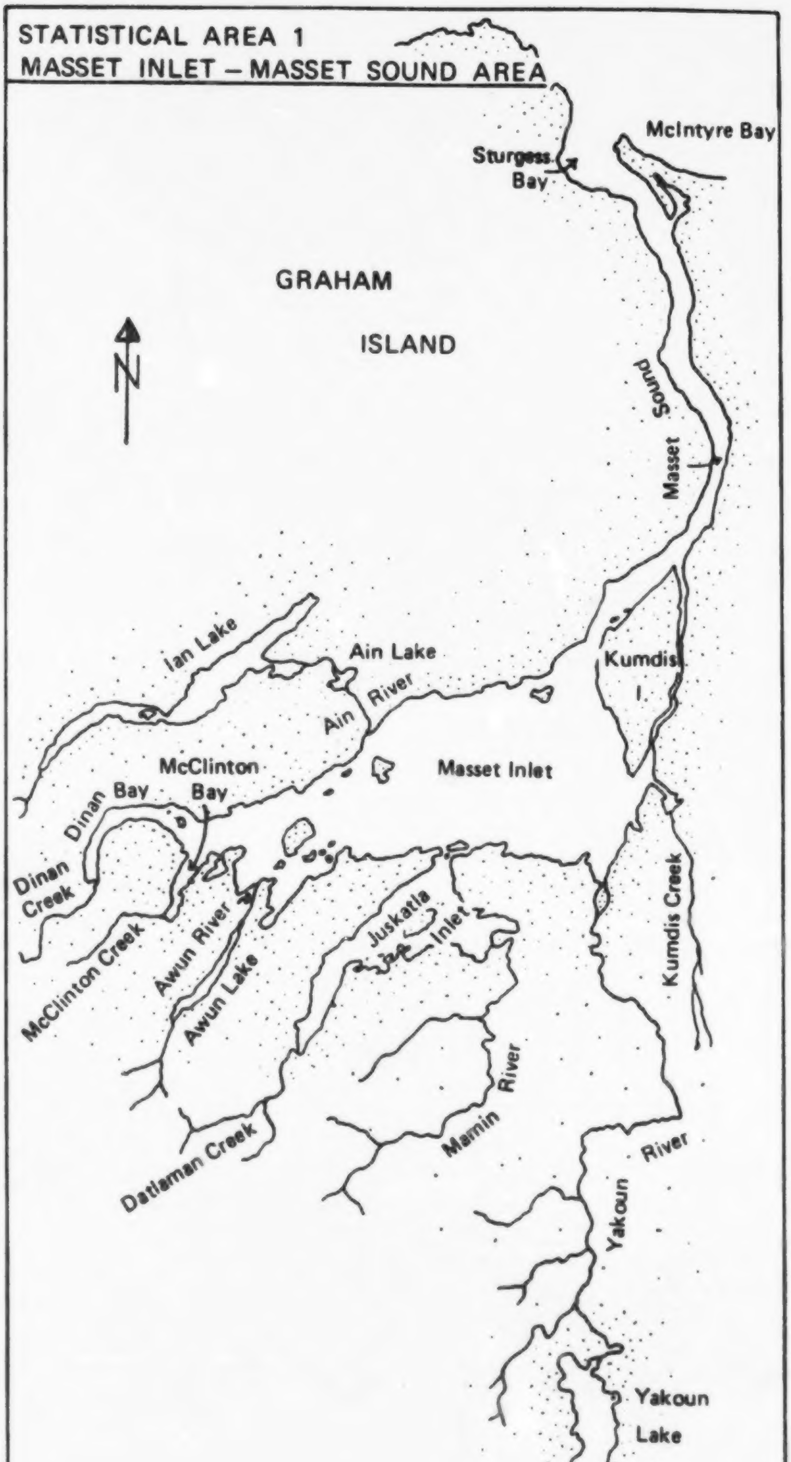
STATISTICAL AREA 1
MASSET INLET – MASSET SOUND AREA
McIntyre Bay
Sturgess Bay
GRAHAM
ISLAND
N
Masset Sound
Ian Lake
Ain Lake
Ain River
Kumdis I.
McClinton Bay
Masset Inlet
Dinan Bay
Dinan Creek
McClinton Creek
Awun River
Awun Lake
Juskatla Inlet
Kumdis Creek
Mamin River
Datlaman Creek
Yakoun River
Yakoun Lake

Fig. 24a. Geographic locations in Masset Inlet - Masset Sound area, Queen Charlotte Islands.

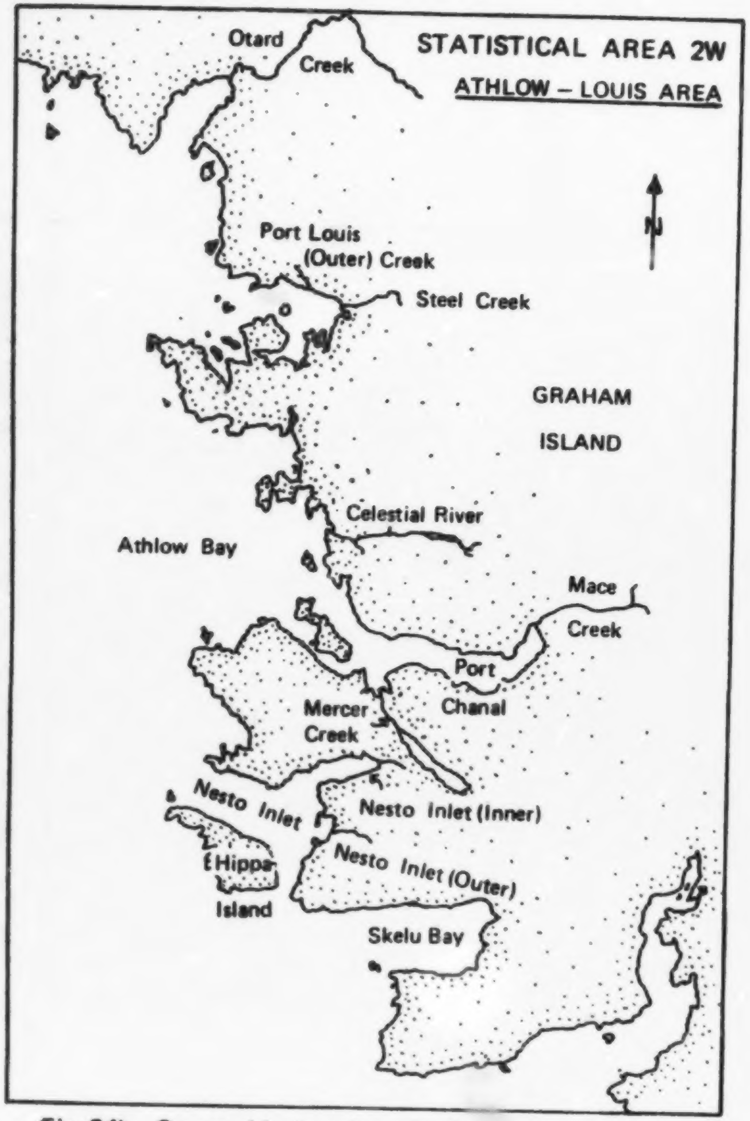
STATISTICAL AREA 2W
ATHLOW – LOUIS AREA
N
GRAHAM ISLAND
Otard Creek
Port Louis (Outer) Creek
Steel Creek
Celestial River
Athlow Bay
Mace Creek
Port Chanal
Mercer Creek
Nesto Inlet
Nesto Inlet (Inner)
Nesto Inlet (Outer)
Hippa Island
Skelu Bay

Fig. 24b. Geographic locations in Athlow - Louis area, Queen Charlotte Islands.

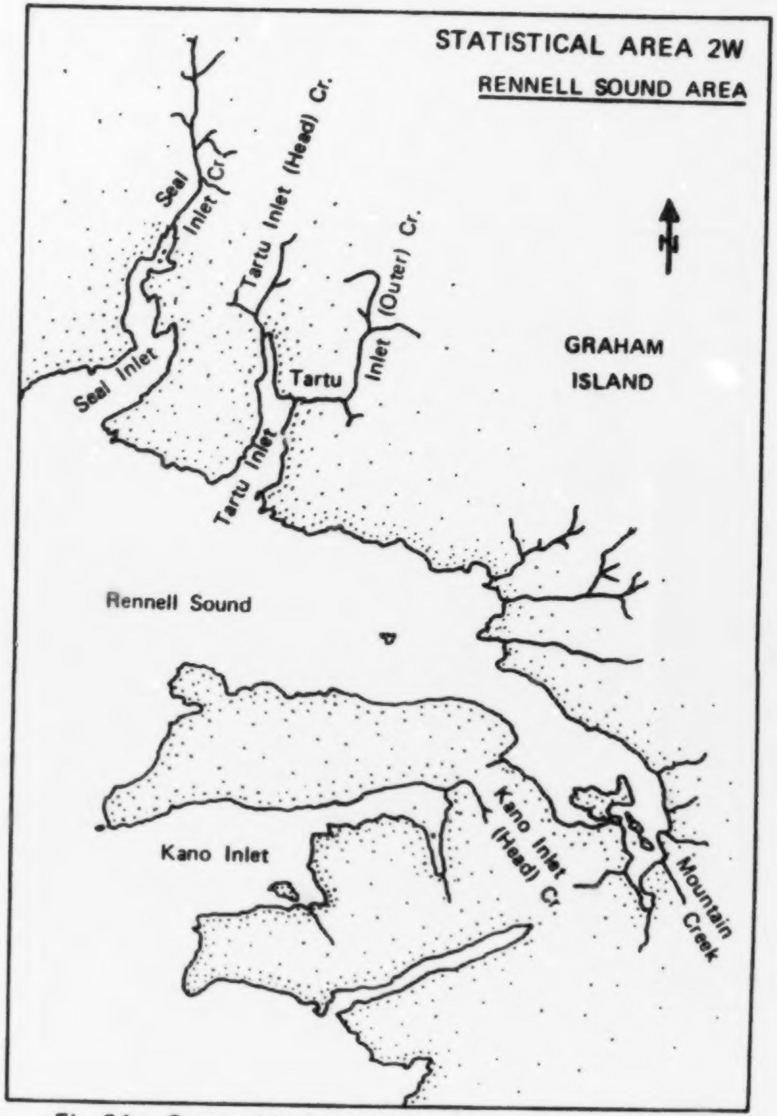
STATISTICAL AREA 2W
RENNELL SOUND AREA
N
GRAHAM ISLAND
Seal Inlet Cr.
Seal Inlet
Tartu Inlet (Head) Cr.
Tartu Inlet (Outer) Cr.
Tartu Inlet
Rennell Sound
Kano Inlet
Kano Inlet (Head) Cr.
Mountain Creek

Fig. 24c. Geographic locations in Rennell Sound area, Queen Charlotte Islands.

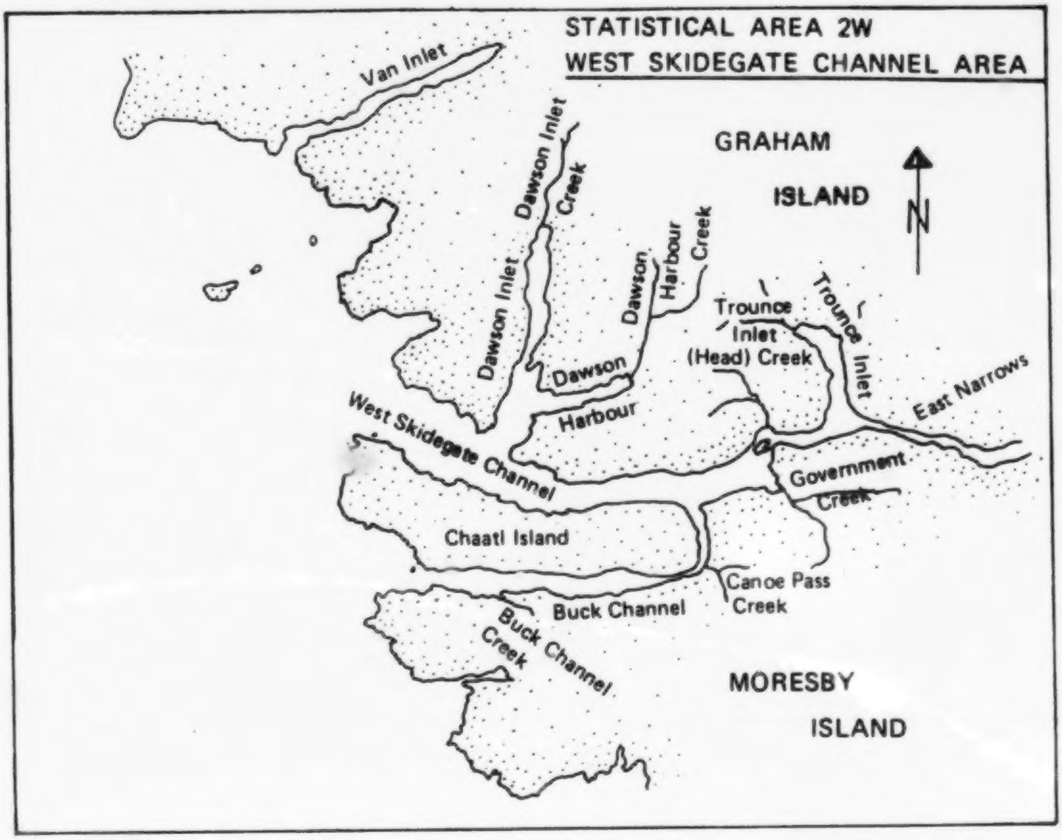
STATISTICAL AREA 2W
WEST SKIDEGATE CHANNEL AREA
Van Inlet
Dawson Inlet
Dawson Inlet Creek
GRAHAM
ISLAND
N
Dawson Harbour Creek
Dawson Inlet
Dawson
Trounce Inlet (Head) Creek
Trounce Inlet
Dawson Harbour
East Narrows
West Skidegate Channel
Government Creek
Chaatl Island
Canoe Pass Creek
Buck Channel
Buck Channel Creek
MORESBY
ISLAND

Fig. 24d. Geographic locations in West Skidegate Channel area, Queen Charlotte Islands.

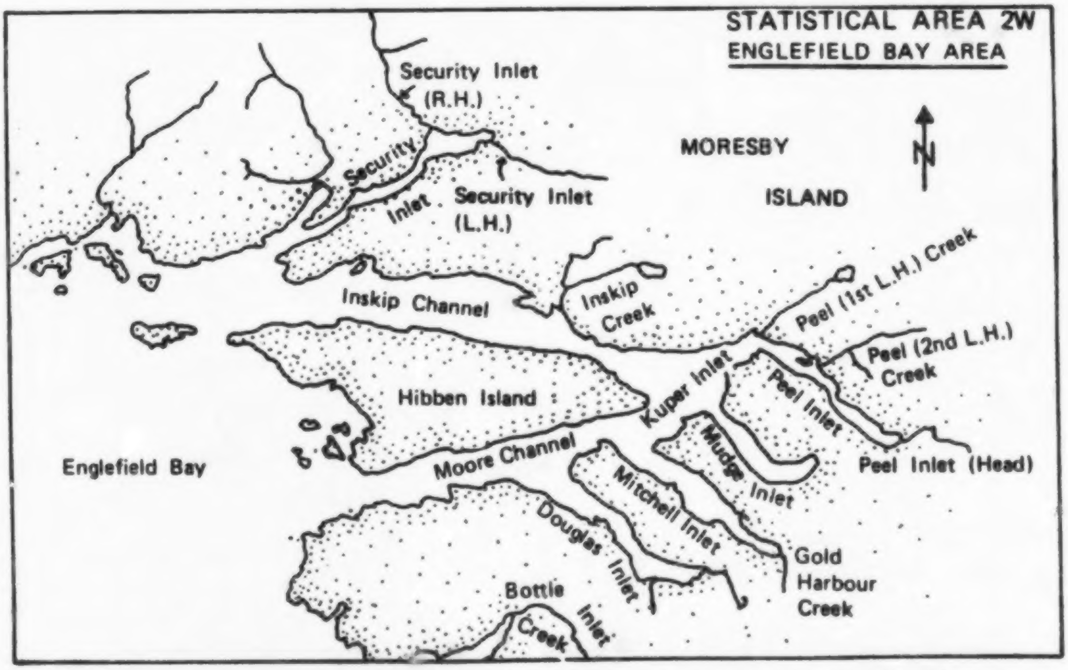
STATISTICAL AREA 2W
ENGLEFIELD BAY AREA
Security Inlet (R.H.)
MORESBY
ISLAND
N
Security Inlet
Security Inlet (L.H.)
Inskip Channel
Inskip Creek
Peel (1st L.H.) Creek
Peel (2nd L.H.) Creek
Hibben Island
Kuper Inlet
Peel Inlet
Peel Inlet (Head)
Englefield Bay
Moore Channel
Mudge Inlet
Mitchell Inlet
Douglas Inlet
Gold Harbour Creek
Bottle Inlet Creek

Fig. 24e. Geographic locations in Englefield Bay area, Queen Charlotte Islands.

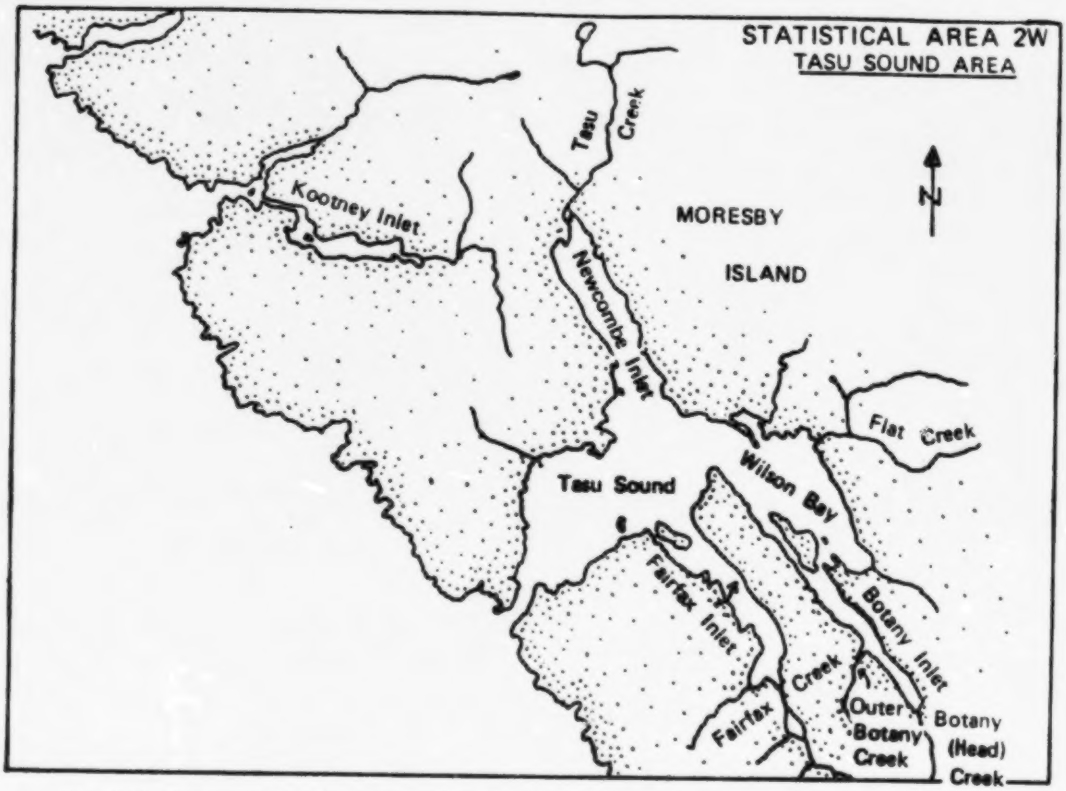
STATISTICAL AREA 2W
TASU SOUND AREA
N
Tasu Creek
MORESBY ISLAND
Kootney Inlet
Newcombe Inlet
Flat Creek
Tasu Sound
Wilson Bay
Fairfax Inlet
Botany Inlet
Fairfax Creek
Outer Botany Creek
Botany (Head) Creek

Fig. 24f. Geograpphic locations in Tasu Sound area, Queen Charlotte Islands.

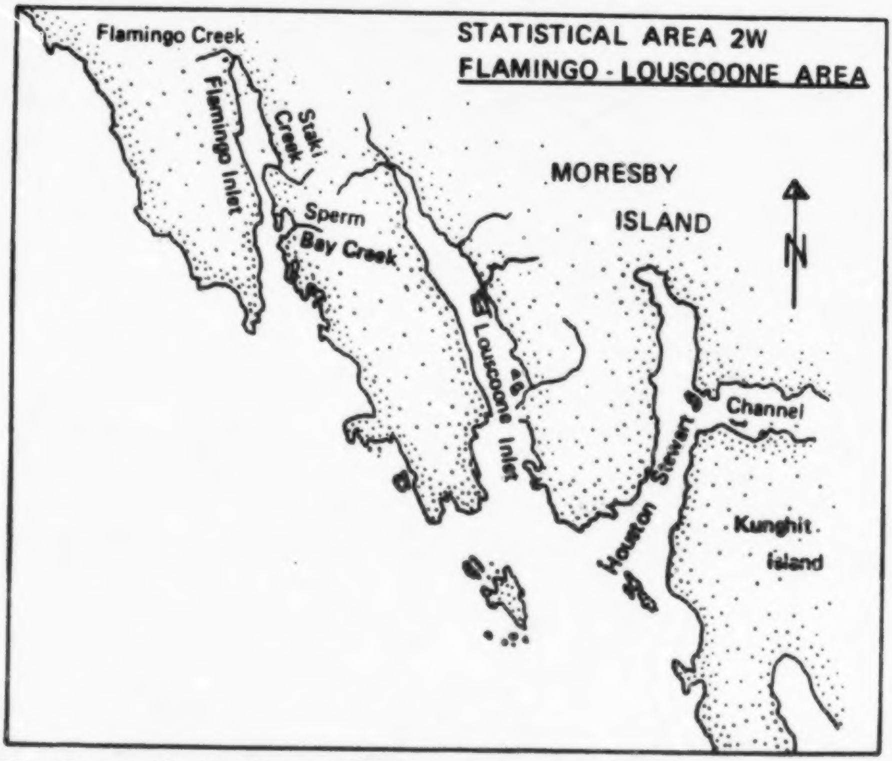
Flamingo Creek
STATISTICAL AREA 2W
FLAMINGO - LOUSCOONE AREA
Flamingo Inlet
Staki Creek
MORESBY ISLAND
N
Sperm Bay Creek
Louscoone Inlet
Stewart Channel
Houston
Kunghit Island

Fig. 24g. Geographic locations in Flamingo - Louscoone area, Queen Charlotte Islands.

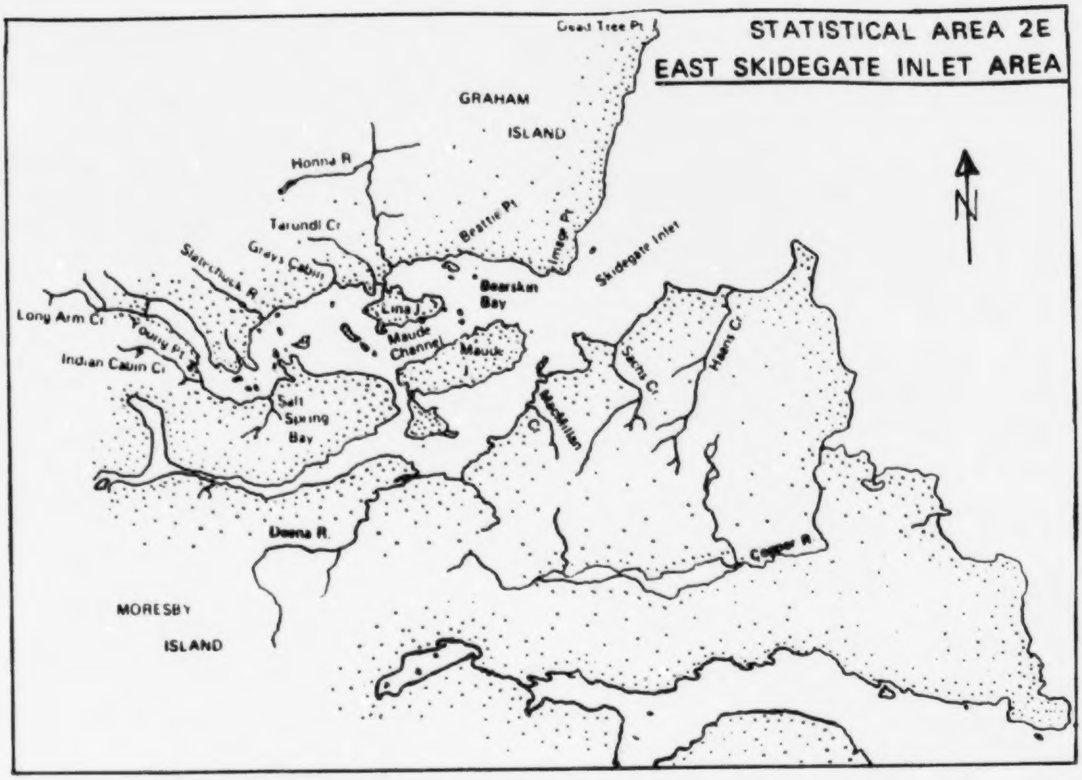
STATISTICAL AREA 2E
EAST SKIDEGATE INLET AREA
Dead Tree Pt
GRAHAM
ISLAND
Honna R
Tarundl Cr
Grays Cabin
Slatechuck R
Beattie Pt
Image Pt
Skidegate Inlet
Bearskin Bay
Lina I
Maude Channel
Maude I
Long Arm Cr
Young Pt
Indian Cabin Cr
Salt Spring Bay
MacMillan Cr
Sachs Cr
Haans Cr
Deena R
Copper R
MORESBY
ISLAND
N

Fig. 24h. Geographic locations in East Skidegate Inlet area, Queen Charlotte Islands.

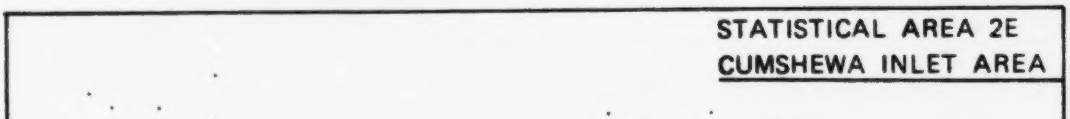
STATISTICAL AREA 2E
CUMSHEWA INLET AREA
Mosquito Lake
Pallant Creek
Braverman Creek
Chadsey Creek
Carmichael Creek
CUMSHEWA
INLET
Cumshewa Head
Mathers Creek
Mathers Lake
MORESBY
ISLAND
LOUISE
ISLAND
Louise Narrows
Skedans Pt.
N

Fig. 24i. Geographic locations in Cumshewa Inlet area, Queen Charlotte Islands.

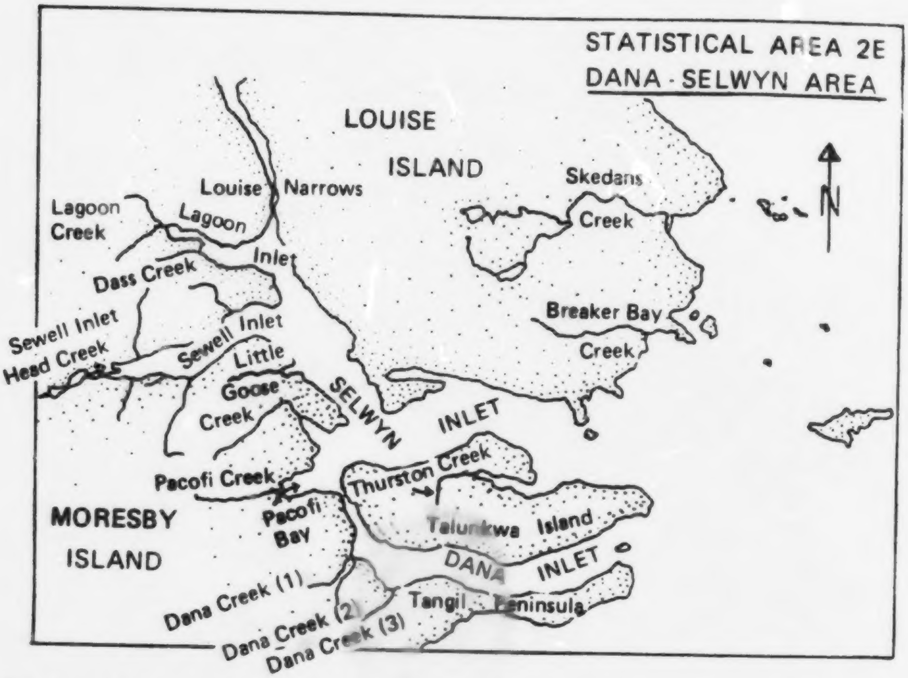
STATISTICAL AREA 2E
DANA - SELWYN AREA
LOUISE ISLAND
Louise Narrows
Lagoon Creek
Lagoon Inlet
Dass Creek
Sewell Inlet Head Creek
Sewell Inlet
Little Goose Creek
SELWYN INLET
Skedans Creek
Breaker Bay Creek
N
Pacofi Creek
Pacofi Bay
Thurston Creek
Talunkwa Island
DANA INLET
MORESBY ISLAND
Dana Creek (1)
Dana Creek (2)
Dana Creek (3)
Tangil Peninsula

Fig. 24j. Geographic locations in Dana - Selwyn area, Queen Charlotte Islands.

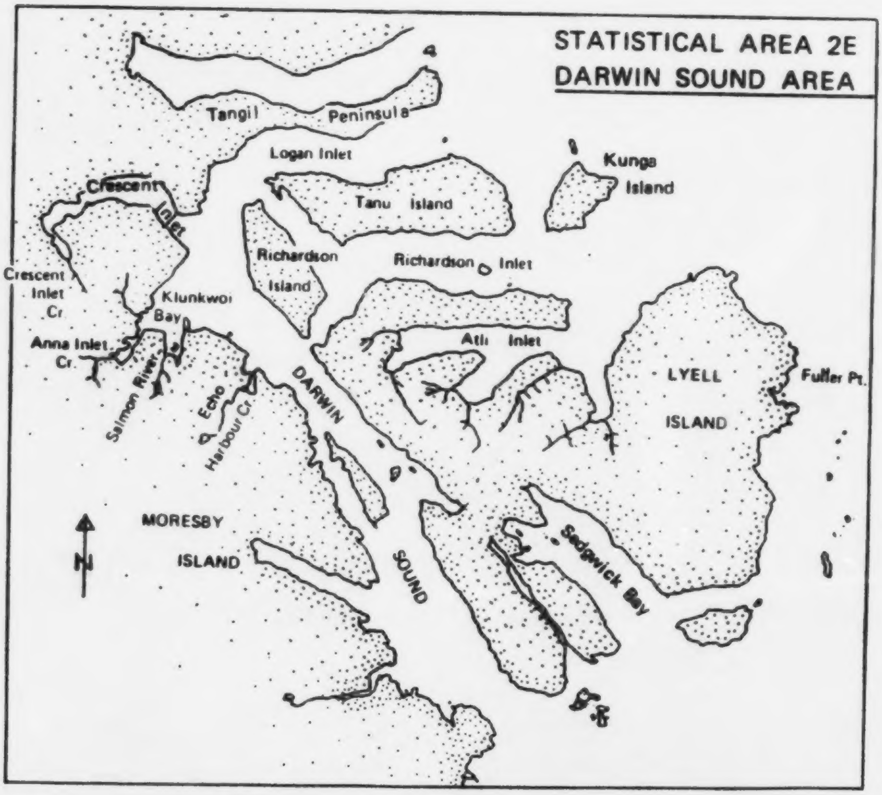
STATISTICAL AREA 2E
DARWIN SOUND AREA
Tangil Peninsula
Logan Inlet
Kunga Island
Tanu Island
Crescent Inlet
Richardson Island
Richardson Inlet
Crescent Inlet Cr.
Klunkwoi Bay
Anna Inlet Cr.
Atli Inlet
LYELL ISLAND
Fuller Pt.
Salmon River
Echo Harbour Cr.
DARWIN SOUND
MORESBY ISLAND
N
Sedgwick Bay

Fig. 24k. Geographic locations in Darwin Sound area, Queen Charlotte Islands.

Table 13. Area 2E chum run timing, Skidegate Inlet, 1984.

	ESCAPEMENT BY STREAM																		
DATE	HAANS	SACHS	MAC-MILLAN	DEENA	EAST NARROW	SALT-SPRING	INDIAN CABIN	LAGINS	SLATE-CHUCK	GRAYS CABIN	TARUNDL	HONNA	MUD BAY	INDIAN CABIN R.H.	LAGINS R.H.	TOTAL	TOTAL %	CUM. TOTAL	CUM. %
Aug 16								0								0	0.00	0	0.00
18											0	0				0	0.00	0	0.00
21							0									0	0.00	0	0.00
22				300												300	0.29	300	0.29
23											20	20				40	0.04	340	0.33
24					0											0	0.00	340	0.33
25									60							60	0.06	400	0.39
27										0						0	0.00	400	0.39
28				1,100							150					1,250	1.22	1,650	1.61
30				50								60				110	0.11	1,760	1.72
31								0	550							550	0.54	2,310	2.25
Sept 2						0	2									2	0.00	2,312	2.25
6				7,000							800					7,800	7.60	10,112	9.86
8									4,100							4,100	4.00	14,212	13.85
10						60		1,200								1,260	1.23	15,472	15.08
11							300						0			300	0.29	15,772	15.37
12				13,000					7,000			2,000				22,000	21.44	37,772	36.82
13											1,100					1,100	1.07	38,872	37.89
14												1,300				1,300	1.27	40,172	39.16
15					350											350	0.34	40,522	39.50
16									4,500							4,500	4.39	45,022	43.88
19				4,300							400	100				4,800	4.68	49,822	48.56
20			18					5,800								5,818	5.67	55,640	54.23
21						270	1,400									1,670	1.63	57,310	55.86
22										170						170	0.17	57,480	56.03
23									3,000							3,000	2.92	60,480	58.95
24							1,500	4,300					26			5,826	5.68	66,306	64.63
29				400										350		750	0.73	67,056	65.36
Oct 1						330	2,450									2,780	2.71	69,836	68.07
2								4,000	3,500							7,500	7.31	77,336	75.38
4								2,800								2,800	2.73	80,136	78.11
5							1,200									1,200	1.17	81,336	79.28
7						300										300	0.29	81,636	79.57
8								1,200					150			1,350	1.32	82,986	80.89
14						270	900						210			1,380	1.35	84,366	82.23
15								3,800	2,200	220						6,220	6.06	90,586	88.29
16					100											100	0.10	90,686	88.39
19				550			230							20		800	0.78	91,486	89.17
20								1,900								1,900	1.85	93,386	91.02
21						40							110			150	0.15	93,536	91.17
23											60					60	0.06	93,596	91.23
25									1,100							1,100	1.07	94,696	92.30
26							950						350			1,300	1.27	95,996	93.57
27								4,500								4,500	4.39	100,496	97.95
28						200				90						290	0.28	100,786	98.24
29					20										40	60	0.06	100,846	98.29
30																0	0.00	100,846	98.29
31											0					0	0.00	100,846	98.29
Nov 2						40			150				110			300	0.29	101,146	98.59
3							180	900								1,080	1.05	102,226	99.64
10							20	350								370	0.36	102,596	100.00
11																0	0.00	102,596	100.00
TOTAL	0	0	18	26,700	470	1,510	9,132	30,750	26,160	480	2,530	3,480	956	370	40	102,596	100.00		

Historical chum fishery catches of local stocks in Area 1 over the last 20 years averaged 3,000 chum annually (range 0 to over 25,000 chum in 1969). In most years, the majority of the catch was taken in Naden Harbour.

In Area 2W, chum fisheries historically occurred from early September to early October in the numerous bays and inlets characteristic of the west coast of the Queen Charlotte Islands. Since 1975, chum fisheries have generally occurred in Area 2W every other year with annual catches of local stocks averaging around 25,000 chum (range from less than 2,000 in 1977 to approximately 125,000 in 1984). Prior to 1975, chum fisheries were held annually, with a mean yearly catch of nearly 100,000 chum during 1965 to 1975 (range 33,000 to 229,000 in 1972). The majority of the catch was taken from Tasu Sound, Rennell Sound, West Skidegate Inlet and Englefield Bay.

Historically, chum fisheries in Area 2E contributed the largest catch to QCI fisheries, averaging over 165,000 fish annually over the last 20 years (range 0 to nearly 550,000 in 1968). Fisheries targeting on chum salmon followed the pink salmon fisheries held in August, and generally occurred from early September to early October in the numerous inlets characteristic of the southeast coast of the Queen Charlotte Islands. Inlets contributing the largest catches included: Juan Perez Sound, Skincuttle Inlet, Skidegate Inlet, Selwyn Inlet and Darwin Sound (Fig. 4). Prior to 1975, catches were considerably higher, averaging over 260,000 chum salmon annually during the 1965 to 1974 time period, with openings generally occurring 2-3 days/week. Since then, low stock abundance during the 1975 brood year precluded any chum fishing that year and during following cycle years in 1979 and 1983. The mean annual chum catch during the last 10 years was approximately 70,000 chum salmon with the majority of fisheries occurring in Skidegate Inlet in recent years. The duration of fishery openings most recently (1980 to 1984) was 1-2 days/week.

ASSESSMENT OF THE 1984 QCI CHUM SALMON FISHERY

In 1984, pre-season forecasts of chum fisheries were realized in two of the Area 2E inlets, Skidegate and Cumshewa Inlets. Additional fisheries in Area 2E were held in Selwyn Inlet and Darwin Sound. The chum salmon returns were above average for these areas and resulted in catches not exceeded in over a decade.

Similarly in Area 2W, several inlets were opened in addition to those forecast pre-season in Tasu, Port Chanal and Flamingo inlets. Catches exceeded the small surpluses anticipated before the season.

Area 1 was opened to chum salmon fishing in Masset Inlet for just over a day and the negligible catches were in agreement with the pre-season forecast of no available surplus. Additionally, the lack of gillnet effort in the inlet during the single opening precluded any further catch assessment in what was historically a traditional gillnet fishery.

Stock composition of the chum catch was generally local, (ie. pertaining to the inlet in which the fishery was held), except for areas in which outside Management Units were opened or areas which served as migration routes for more distant stocks. The former areas included the following fishery locations in Area 2E where fishing gear was observed and most likely harvested chum salmon bound for adjacent inlets: southern Laskeek Bay, outer Logan and outer Richardson Inlets (M.U. 2-1). The latter areas included Skidegate Inlet (M.U. 2-8) in Area 2E, and West Skidegate Inlet (M.U.'s 2-64, 2-66) and Trounce Inlet (M.U. 2-67) in Area 2W (see Dickson MS 1972).

Outside regions in Area 2W where fisheries most likely intercepted a proportion of chum salmon bound for adjacent Area 2E inlets included: Hippa Island (mouth of Nesto Inlet, M.U. 2-87), mouth of Tasu Sound (outer M.U. 2-42) and the mouth of Flamingo Inlet (M.U. 2-35). In most of the above noted areas, interception of passing chum salmon was probably small except for West Skidegate, Skidegate, outer Logan and outer Richardson Inlets where a more substantial interception rate was suspected, particularly as evidenced by the occurrence of bright fish in the outside regions.

Results from mark recovery sampling of QCI chum catches in the various inlets indicated a hatchery contribution of approximately 38,000 chum salmon in total Area 2E chum fisheries. This indicated that 15% of the Area 2E sales slip catch originated from Pallant and Mathers Creek chum hatcheries (McKenzie and Thomas MS 1985). Chum hatchery contribution to fisheries in Cumshewa Inlet, Skidegate Inlet and Darwin Sound was estimated at 35,197, 1,800 and 991 chum respectively. Of the 4 marks recovered in Area 2W, 3 were recovered in Tasu Sound and 1 in West Skidegate Channel. Based on these data, a total contribution of approximately 870 hatchery chum salmon was attributed to Area 2W fisheries in these two inlets (McKenzie and Thomas MS 1985).

In past years (1970 to 1982), mean chum salmon stock contributions to fisheries on the Queen Charlotte Islands were estimated through run reconstruction as follows (Charles and Henderson 1985):

Fishery Area	% Chum Catch by Area		
	Area 2W	Area 2E South	Area 2E Skidegate
Area 2W	81.2	18.6	17.6
Area 2E South	0	60.7	20.3
Area 2E Skidegate	0	16.8	54.2

In terms of stock management, the QCI fall chum fishery was generally well managed in Area 2E despite deficiencies in escapement to some systems. In Skidegate Inlet (Area 2E), early run stocks (Deena, Honna, Tarundl) were depressed relative to the stronger late run stocks (Lagins, Slatechuck, Indian Cabin) and the fishery was delayed to allow for additional escapement to the less productive streams.

In Cumshewa Inlet (Area 2E), imbalanced enhanced production of chum from the Pallant and Mathers Creek hatcheries was responsible for the very large return of the Pallant Creek chum stock in contrast to a very weak Mathers Creek run. The latter suffered a lower productivity and was estimated at an order of magnitude less than the Pallant chum production. This imbalance accounted for the considerable deficiency in escapement to Mathers Creek. Harvest impacts on chum bound for Mathers Creek were substantial, though minimized through boundary adjustments.

The Selwyn Inlet (Area 2E) escapement goals were nearly met following a modest 1-day fishery which exerted an estimated 20% exploitation rate on the available stock.

In Darwin Sound (Area 2E), future fisheries in outer Logan and outer Richardson Inlets might be moved more terminally to minimize the interception of north and southward migrating chum. In addition, stock assessment should be improved through more quantitative techniques in order to optimize fish quality and reduce the risk of overharvesting the stock. A higher exploitation rate of approximately 70% was estimated in this area, possibly due to the additional catch of passing chum in the outer regions approaching Hecate Strait. By contrast, terminal area exploitation rates on chum salmon stocks in Skidegate and Cumshewa Inlets were estimated at approximately 60% in 1984 and approximately 40% annually during the 1970 to 1982 period (Charles and Henderson 1985).

The Area 2W fisheries were generally characterized by greater management uncertainty and risk compared to the Area 2E fisheries. This was evidenced by the resultant escapement shortfall of 30% or greater in Area 2W in 1984. The tendency to open fisheries early in the season for general exploratory purposes prior to stock strength assessment, and to ensure higher fish quality, may lead to a decline in stocks over the longer term, as projected through modelling scenarios of fisheries management options in the Salmon Resource Management Plan (DFO 1985). In addition, outside areas should be managed carefully in order to minimize the interception of chum stocks bound for other inlets in Areas 2W and 2E, in the event that these stocks may not withstand multiple harvest or provide any surplus catch. Management priorities should be considered in the following successive order:

1. stock conservation,
2. fish quality,
3. fishery coordination and fleet distribution and
4. socio-economic considerations.

Management priorities should be defined and applied to in-season management discussions in order to direct the Area 2W chum fishery toward stock rebuilding over the longer term.

In terms of fleet management, the QCI chum fisheries in 1984 were generally synchronized with fisheries in one or more local areas in order to optimize fleet distribution. The exception was the Tasu Sound fishery on September 24 which opened singly in order not to compromise fish quality; other areas were not opened coincidentally because of stock conservation concerns.

In summary, the fall chum salmon net fishery on the Queen Charlotte Islands in 1984 was the largest and most extensive in over a decade and included a substantial catch of the first commercially harvestable enhanced chum returns to Cumshewa Inlet. Fisheries management in Area 2E generally resulted in attainment of the escapement goals for 1984. However, in Area 2W, greater management uncertainty hindered the achievement of escapement goals on the less productive stocks characteristic of the west coast of the Queen Charlotte Islands.

SALMON ESCAPEMENTS, QUEEN CHARLOTTE ISLANDS

The annual escapements of salmon by species to Areas 1, 2W and 2E are presented for the period 1950 to 1984 in Tables 14, 15 and 16 respectively. In general, the 1984 spawning escapements for all species were below the optimum levels listed in the Commercial Fishing Guide (DFO 1984) (Append. 2, 3 and 5), except for the Area 1 pink salmon escapement which slightly exceeded the optimum level. However, on a stream by stream basis, optimum escapements were at times achieved in all areas.

In Area 1, the 1984 chum spawning escapement of approximately 53,000 fish was 38% below the optimum but nearly 20% above the previous 10-year average (Table 14). The Area 1 sockeye escapement of 18,500 fish was below the estimated optimum of 55,000 and 31% below the previous 10-year average. The most notable decline in escapement was observed for chinook salmon spawning in the Yakoun River where only 300 spawners were estimated in 1984. This was the lowest escapement on record and represented a decline of 65% from the previous 10-year average. The Yakoun chinook salmon stock is the only chinook stock spawning on the Queen Charlotte Islands. Serious declines in this stock through overharvesting in the last decade appear to threaten its future viability. Likewise, declines in coho salmon during the 1980 to 1984 period to approximately one-third the escapement estimated for the previous five-year period (1975-1979) may warrant conservation action in troll fisheries in the Dixon Entrance (Area 1) and Alaska (Table 14).

In Area 2W, the 1984 chum spawning escapement of approximately 64,000 fish was 68% below the optimum but nearly 25% above the previous 10-year average (Table 15). The Area 2W sockeye escapement of 1,550 fish was below the estimated optimum of 10,000 and 49% below the previous 10-year average. Coho escapement was similar to that observed in recent years and similar to the previous 10-year average. The even year pink salmon escapement of less than 70,000 was well below the optimum estimate of 500,000 and only about one-half the previous five-year cycle average.

In Area 2E, the 1984 chum spawning escapement of approximately 278,000 fish was 30% below the optimum estimate of 400,000 but nearly twice as high as the previous 10-year average (Table 16). In general, pink salmon escapement was low in 1984, except for the noted excess in Echo Harbour. The 1984 spawning estimate for Area 2E of less than 200,000 pink salmon was roughly one-quarter the optimum escapement and less than one-half the previous five-year cycle average. Coho escapement was estimated to be 35% below the previous 10-year average, while sockeye escapement increased by 42% over the 1974-83 average, but remained below optimum levels.

In interpreting the above escapement data, it must be noted that in addition to the uncertainty in defining optimum escapements for salmon spawning streams on the Queen Charlotte Islands and elsewhere, estimates of escapement based on foot surveys are highly variable, depending on such factors as observer experience, size and depth of stream, viewing conditions and frequency of observation. Thus, the consistency of the data both in-season and between years is questionable since no documentation exists for these population surveys and since the methods used for data collection are not standardized. This is

Table 14. Area 1 annual spawning escapements for sockeye, coho, chum, chinook and pink salmon, 1950 - 1984.

YEAR	SOCKEYE	COHO	CHUM	CHINOOK	PINK
1950	NA[a]	16500	11000	NA	277500
1951	22000	44900	119200	NA	3500
1952	7400	12950	50800	1500	541400
1953	5000	1200	121475	NA	3500
1954	1500	10400	90750	NA	301200
1955	NA	5050	22650	NA	NA
1956	3500	7675	3700	750	440500
1957	3050	13550	146775	1500	18500
1958	39325	5150	23500	NA	402000
1959	12500	20200	18525	3500	18000
1960	13250	14150	15125	750	98575
1961	12250	23850	26025	3500	20000
1962	35100	35800	14575	1500	175675
1963	13250	12575	10700	NA	18575
1964	25500	60300	95025	7500	441825
1965	10250	77850	161600	15000	33550
1966	5425	13025	93950	7500	1068825
1967	8525	23625	31575	1500	150
1968	20400	10250	37500	1500	1335900
1969	48500	6825	45000	1500	200
1970	26500	24050	24800	600	432650
1971	16500	14335	44500	500	6050
1972	17500	26150	8600	1000	329900
1973	38000	58350	50000	900	4000
1974	39000	97100	41800	1000	201400
1975	16500	47000	168050	1500	3950
1976	40900	153500	53500	750	285050
1977	26750	55400	59300	600	4900
1978	20300	61250	56200	600	217500
1979	20650	34750	33450	475	3125
1980	34400	17580	14458	600	290795
1981	23000	18000	26100	850	3650
1982	26500	35250	70800	1400	211250
1983	19500	20600	35225	600	2130
1984	18500	26850	52775	300	1213900

					ODD-YEAR	EVEN-YEAR
AVG 1950-59	11784	13758	60838	1813	8700	392520
1960-69	19245	27825	53108	4472	14495	624160
1970-79	26260	57189	56020	825	4405	293300
1980-84	24780	24056	39872	750	2890	571982

[a] Not available.

Table 15. Area 2W annual spawning escapements for sockeye, coho, chum and pink salmon, 1950 - 1984.

YEAR	SOCKEYE	COHO	CHUM	PINK
1950	5000	3445	335200	192800
1951	3900	18650	369075	5050
1952	NA[a]	6255	560575	639500
1953	1150	1779	81575	1625
1954	1150	5300	191350	381000
1955	400	1775	11425	800
1956	3500	600	24125	119625
1957	NA	11150	144550	1625
1958	7500	1375	85000	131525
1959	5000	810	21629	8270
1960	6300	6000	31762	148230
1961	5500	3670	88625	8050
1962	3900	16350	52350	80075
1963	7700	1215	70375	3700
1964	3000	10500	221775	56325
1965	9000	4475	54725	35475
1966	9000	17275	134475	225375
1967	7800	6682	104806	6000
1968	8500	4430	119191	148770
1969	15000	4110	79500	6025
1970	4500	3650	132725	299625
1971	4500	696	78476	NA
1972	5050	2550	142500	310800
1973	5400	271	49950	NA
1974	3000	835	53823	147875
1975	1025	350	28751	352
1976	1856	648	31579	47971
1977	1201	635	49721	125
1978	4053	1054	38145	155413
1979	4452	851	49609	601
1980	3050	565	89705	164976
1981	4560	1952	47928	457
1982	3831	856	93465	112492
1983	3659	795	32169	516
1984	1550	793	63570	67426

				ODD-YEAR	EVEN-YEAR
AVG 1950-59	3450	5114	182450	3474	292890
1960-69	7570	7471	95758	11850	131755
1970-79	3504	1154	65528	216	192337
1980-84	3330	1072	65367	487	114965

[a] Not available.

Table 16. Area 2E annual spawning escapements for sockeye, coho, chum and pink salmon, 1950 - 1984.

YEAR	SOCKEYE	COHO	CHUM	PINK
1950	6225	44894	416500	359725
1951	15300	115628	414350	29775
1952	3500	75900	600550	696550
1953	15225	21650	142900	25775
1954	35025	58850	291400	406725
1955	7500	40460	35925	23275
1956	15000	38600	105700	262600
1957	35000	46375	138375	46275
1958	NA[a]	33950	168975	192750
1959	200	49275	27743	25275
1960	15200	59522	181543	370645
1961	15075	105175	175975	42325
1962	35000	56100	309725	626800
1963	30000	59179	284808	115400
1964	15000	101350	429980	146595
1965	20000	54380	227900	45550
1966	25000	125475	372137	509400
1967	27000	68700	270675	71950
1968	42500	43480	294410	769343
1969	38525	84650	176275	120425
1970	23500	86250	198975	808360
1971	20000	19304	221400	26700
1972	3000	47475	187205	766950
1973	15000	48350	225725	34225
1974	8000	16890	121910	422271
1975	20093	56570	73732	20365
1976	11006	55625	139000	649900
1977	10650	37025	159825	3580
1978	6000	59565	210152	531000
1979	3000	28387	43158	17788
1980	5687	24656	160580	305112
1981	3000	26544	164924	9417
1982	1650	37059	201556	166796
1983	9000	28660	156080	13245
1984	11001	24230	277961	191895

				ODD-YEAR	EVEN-YEAR
AVG 1950-59	14775	52558	234242	30075	383670
1960-69	28330	75801	272343	79130	484557
1970-79	11964	45746	158108	21532	635696
1980-84	6108	28230	192220	11331	221268

[a] Not available.

currently one of the major problems associated with fisheries management on the Queen Charlotte Islands.

SUMMARY OF QCI COMMERCIAL SALMON FISHERY, 1984

In total, over 3.2 million salmon were harvested in 1984 in Statistical Areas 1, 2E and 2W of the waters surrounding the Queen Charlotte Islands. Approximately 75% of the salmon caught were taken in Area 1, 30% by seine gear and 70% by troll. The remainder of the catch was divided nearly equally between Areas 2W and 2E and was taken predominantly by seines. Catches were attributed to three distinct types of commercial fisheries: an interception net fishery in Areas 1 and 2W from mid-July to early August which targeted on passing sockeye and pink stocks, local pink and chum salmon net fisheries which occurred in coastal bays and inlets in the August through October period and harvested salmon stocks destined to spawn in local streams, and an offshore troll fishery which targeted on chinook, coho and pink salmon from mid-June and July through late September in 1984. The overall species catch for the Queen Charlotte Islands was as follows: 2,066,130 pink, 437,697 chum, 414,173 coho, 173,231 chinook and 133,543 sockeye salmon.

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APPENDIX 1. Record of QCI salmon management telexes to industry, May 22 - October 23, 1984.

May 22: Trolling for chinook salmon will open as scheduled from 1200 hrs PST or 1300 hrs PDT, May 23/84 until 1300 hrs PDT Jun 3/84 in the following areas: Areas 1 to 11, 30-3 and 31. Inside the surfline these sub-areas will be open: Area 1 - sub-areas 1-1, 1-2, 1-3, 1-5 and 1-7; Area 2W - all sub-areas; Area 2E - all sub-areas.

June 21: Areas 1, 2W - Anticipated net fishing on July 15 for 1 day in Area 1 and 2 days in Area 2W; Area 2E - No anticipated openings until Aug.19.

June 28: Areas 1 and 2W - Anticipated net fishing on July 15 for 1 day in Area 1 and 2 days in Area 2W; Area 2E - no anticipated net opening until Aug.19.

June 28: Trolling is open on July 1 in the following areas: Areas 1, 2E and 2W- open in all sub-areas except 1-4 and 1-6. Regular creek boundaries in effect.

Jul 05: Areas 1, 2E and 2W remain closed to nets, troll openings same as last week.

Jul 09: Large number of trollers were observed in Masset at docks on Sunday and Monday to unload fish and get ice prior to possible strike.

Jul 17: Areas1, 2W, 3 and 5 - closing to nets as scheduled 1800 hrs Tues July 17.

Jul 19: Area 1 - Open to nets 1800 hrs Sun to 1800 hrs Mon in sub-areas 1-2, 1-3 and 1-7. Trolling 7 days/wk throughout except 1-4 and 1-6; Area 2E - closed to nets, trolling 7 days/wk; Area 2W - Open to nets 1800 hrs Sun to 1800 hrs Mon in sub-areas 2-69 to 2-78 inclusive. Rennell Sound and Kano Inlet divided into new management areas, clarification available on the grounds. Note: extensions in Area 1 and 2W are subject to available passing stocks.

Jul 23: Areas 1 and 2W will close to nets as scheduled 1800 hrs Mon Jul 23.

Jul 26: Area 1 - Open to nets for 24 hrs from 1800 hrs Sun Jul 29 to 1800 hrs Mon Jul 30 in sub-areas 1-2, 1-3 and 1-7; Trolling 7 days/wk except sub-areas 1-4 and 1-6. Area 2W - Open to nets for 24 hrs from 1800 hrs Sun Jul 29 to 1800 hrs Mon Jul 30 in sub-areas 2-69 to 2-78 inclusive. This opening completes scheduled Area 2W openings on passing stocks for this season. NOTE: extensions in Areas 1 and 2W are subject to available passing stocks; Area 2E - closed to nets. Trolling 7 days/wk.

Jul 31: Areas 1 and 2W - Closes to nets 1800 hrs Tues Jul 31 as scheduled.

Aug 02: Area 1 - Open to nets 1800 hrs Sun Aug 5 to 1800 hrs Mon Aug 6 in sub-areas 1-2 and 1-7. Trolling 7 days/wk except sub-areas 1-4 and 1-6. Area 2W - Open to nets 1800 hrs Sun Aug 5 to 1800 hrs Mon Aug 6 in sub-areas 2-69, 2-70, 2-71 and 2-78 only. No extension is anticipated. These sub-areas include Kano Inlet and only the outside portion of Rennell Sd. with the outside tie off closed. Boulder Bay to Cone Head area is closed. Area 2E - Closed to nets. Trolling 7 days/wk.

Aug 05: Area 1 - Open to nets for 24 hrs from 1800 hrs Sun Aug 5 to 1800 hrs Mon Aug 6 in sub-areas 1-2, and 1-7 only. Area 2W - Open to nets for 24 hrs from 1800 hrs Sun Aug 5 to 1800 hrs Aug 6 in sub-areas 2-69, 2-70, 2-71 and 2-78 only. These areas include Kano Inlet and only the outside portion of Rennell Sd. with the ouside tie off closed. Boulder Bay to Cone Head area is closed. No extension is anticipated.

Aug 07: Area 1 - Closed to nets as scheduled 1800 hrs Mon Aug 6. Area 2W - Closed to nets as scheduled 1800 hrs Mon Aug 6.

Aug 09: Area 1 - Open to nets 1800 hrs Sun Aug 12 to 1800 hrs Mon Aug 13 in sub-areas 1-2 and 1-7. Future openings may be subject to local pink and chum escapement requirements. Trolling 7 days/wk except sub-areas 1-4 and 1-6. Areas 2E and 2W - Closed to nets. Trolling 7 days/wk.

Aug 13: Area 1 - Extended to gillnets and seines until 1800 hrs Tues Aug 14.

Aug 14: Area 1 - Closes as scheduled to nets 1800 hrs Tues Aug 14.

Aug 16: Areas 1, 2E & 2W - Closed to nets until further notice.

Aug 19: Area 1 - Open to nets 0700 hrs to 2000 hrs Mon Aug 20 (13 hrs) in sub-area 1-6 (Masset Inlet); western side of Masset Inlet closed from a line at Makai Point to the east shore of Kwaikans Island to a red triangle boundary sign 1/2 mile east of Ain River, plus river mouth boundaries. Escapement increased rapidly in the last 2 days to a total of 300,000. The total stock size is uncertain. The catch and escapement will be evaluated after this opening with regards to future openings. The limited fishing area is shallow and historically supported 20 to 40 seines.

Aug 21: Area 1 - Extended to nets until 2000 hrs Wed Aug 22.

Aug 22: Area 1 - Extended to nets until 2000 hrs Thurs Aug 23.

Aug 23: Area 1 - Remains open to nets in sub-area 1-6 (Masset Inlet) until further notice. Pink catch to Aug 23 is 230,000, escapement in river 500,000. Fishing averages 2500-3000 pinks per seine per day. Areas 2E and 2W - Closed until further notice; no evidence of pink abundance, monitoring continues.

Aug 27: Area 1 - Remains open to nets until further notice.

Aug 29: Area 2E - Open to nets for 12 hrs from 0800 hrs until 2000 hrs Fri Aug 31 in sub-areas 2-10 (Darwin Sound) and 2-8 (with possible Crescent River mouth boundary). This opening is to harvest a believed to be small surplus of pinks that hrs increased over the last 2 days. The area last opened in 1978 with a catch of 30,000 pinks by 5 seiners. Area 2W - A few chums showing, too early to identify fishing opportunities.

Aug 30: Area 1 - Masset Inlet remains open to nets; catch for 11 days 600,000, escapement 1 million pinks. Area 2E - Open to nets as previously announced for 12 hrs from 0800 to 2000 hrs Aug 31 in sub-areas 2-10 (Darwin Sound) and 2-8 (with possible Crescent River mouth boundary). This opening is to harvest a believed to be small surplus of pinks that has increased over the last 2 days. The area last opened in 1978 with a catch of 30,000 pinks by 5 seiners. Area 2W - Chum monitoring continues.

Aug 31: Area 2E - Extended to nets until 2000 hrs Sat Sept 1.

Sep 01: Area 2E - Extended to nets until 1800 hrs Sat Sept 1.

Sep 06: Area 1 - Closes to nets 1800 hrs Thurs Sept 6. Sept 5th - 5 seines operating with 500 piece average. Total catch: 699,000. Escapement: 1.2 million pinks. Chums will continue to be assessed in this area. Areas 2E, 2W - The area continues to show small signs of chums throughout. No fishable surplus identified. Monitoring to continue. Next scheduled announcement to industry Sept 13; however, should stock size change before this date industry can expect a short notice announcement.

Sept 13: Area 1 - Closed until further notice. Area 2E - Stocks improving but below 1982 stock levels to this date. Area 2W - Stock building slowly, no surplus identified to date. Tasu and other area stocks being closely monitored. NOTE: Trolling remains open in normal areas until 0001 hrs Thurs Sept 20 when trolling is closed for the balance of the season. Fall bunts are required except in the Queen Charlotte Islands.

Sept 14: Area 1 - Closed until further notice; Area 2E - Open to gillnets and seines for 10 hrs from 0800 hrs until 1800 hrs Sun Sept 16 in sub-area 2-1 (part of Skidegate Inlet). Regular Creek boundaries are in effect. Kagan Bay-Long Inlet are closed. Area 2W - Open to gillnets and seines from 0800 hrs until 1800 hrs Sun Sept 16 in sub-areas 2-42, 2-55, 2-58, 2-60, 2-82, 2-83 and 2-87. These areas include outer Tasu Sound, Englefield Bay, and Seal and Nesto Inlets. These are exploratory fisheries only, to assess stock strengths.

Sept 17: Area 2E - Closing as scheduled 1800 hrs Mon Sept 17. Area 2W - Closed until further notice, no further openings anticipated.

Sept 17: Area 2E - Closed to nets as scheduled 1800 hrs Sun Sept 16. Re-opens 0800 hrs to 1800 hrs Mon Sept 17; Area 2W - Closed to nets as scheduled 1800 hrs Sun Sept 16.

Sept 21: Area 2W - Open to nets 0800 hrs until 1800 hrs Sun Sept 23 in sub-areas 2-42 and 2-43 (Tasu Sd).
NOTE: Area 1, Area 2E and remainder of 2W will be updated with stock assessment and future fishing plans on Tuesday, Sept 25. Stocks appear to be building in Selwyn, Cumshewa, Skidegate, Flamingo and Trounce Inlets.

Sept 24: Area 2E - Skidegate Inlet - As outlined in the Sept 21 meeting between DFO staff and fishermen, a fishery was anticipated for the upcoming week subject to increased escapements. The Minister encouraged fishermen to accompany DFO staff on stream surveys this weekend. Following this stock assessment the Department has announced an opening in Area 2E for 8:00 AM Wed Sept 26 with sub-areas to be announced by 8:00 AM Tuesday Sept 25. The stock assessment has indicated an additional 3000 fish in the Slatechuck and Lagins Rivers plus fish in the protected area. The Cumshewa and Selwyn areas continue to be monitored with possible openings also Wed morning. Area 2W - Tasu Sound closed to nets as scheduled 1800 hrs Sun Sept 23. Estimated catch for 25 seines and 12 gillnets was 25,000 pieces.

Sept 24: Area 2W - Closed to nets as scheduled 1800 hrs Sun Sept 23.

Sept 25: Area 2W - Open to nets 0800 hrs until 1300 hrs Wed Sept 26; open in Flamingo Inlet sub-areas 2-35, 2-36, 2-37; open in Nesto Inlet sub-area 2-87; open in Seal Inlet sub-areas 2-82 and 2-83; open in Trounce Inlet sub-area 2-67; open in West Skidegate Inlet sub-areas 2-64, 2-65, 2-66 with creek mouth boundaries in effect except for Government Creek. Area 2E - Open to nets 0800 hrs until 1800 hrs Wed Sept 26; open in Skidegate Inlet sub-area 2-1. Creek boundaries are modified to open Kagan Bay to harvest Slatechuck chums, other boundaries available on the grounds; open in Cumshewa Inlet sub-areas 2-3, 2-4. Concerns for Mathers Creek chums may require implementation of a ribbon boundary on short notice east of Renner Point. Selwyn Inlet stocks are building slowly, no fishable surplus identified. Area 1 - monitoring continues, no surplus identified.

Sept 26: Areas 2E and 2W - Closed to nets 6 pm Wed Sept 26 as scheduled. Re-opens to nets 8 am until 6 pm Thurs Sept 27. Same boundaries.

Sept 28: Areas 2E and 2W - Closed to nets 1800 hrs Thurs Sept 27 as scheduled.

Sept 28: Area 1 - Closed until further notice; assessment continues. Area 2E - Skidegate Inlet will open to nets Sun AM, Sept 30. Details to be announced Sat Sept 29 0800 hrs on the grounds. Assessment continues in other sub-areas. Area 2W - Assessment continues.

Oct 02: Area 1 - Closed until further notice; assessment continues. Area 2E - No stock changes in Darwin Sound. Cumshewa fence count to date 3,110 chum, future fisheries questionable. Skidegate Inlet - no further fisheries anticipated. Area 2W - Open to nets 0800 hrs to 1800 hrs Wed Oct 3 in sub-areas 2-91(Port Chanal). This fishery is to harvest a recently identified surplus.

Oct 03: Area 1 - Masset Inlet - chum stocks improving; Naden Harbour - no improvement. Area 2E - No improvement in stocks. Cumshewa fence count 3,900 chum to date. Darwin stocks - no change. Skidegate Inlet continues to be monitored. Area 2W - sub-areas 2-90 (which opened to nets at 10 am Oct 3) and 2-91 (Port Chanal) extended to nets until 1200 hrs Thurs Oct 4. Catch for 12 seines is 4550 pieces - fish brite.

Oct 04: Area 1 - No fishing surplus. Monitoring continues. Area 2E - Darwin, Cumshewa, Selwyn - no stock change; Skidegate Inlet continues to be monitored. Area 2W - Closed to nets at 1200 hrs Thurs Oct 4. Estimated catch for 12 seines 5000.

Oct 05: Areas 1 and 2E - Monitoring continues, next announcement Sun afternoon Oct 7. Area 2W - No further fisheries expected.

Oct 09: Area 1 - Open to nets 1230 hrs Tues Oct 9 until 1230 hrs Wed Oct 10 in sub-area 1-6. Regular creek boundaries are in effect plus the triangle boundary in front of the Ain River. This fishery is to assess incoming stocks. Area 2E - Open to nets 1230 hrs Tues Oct 9 until 1230 hrs Wed Oct 10 in sub-area 2-1, (Skidegate Inlet). A compliance boundary will be in effect to protect coho stocks and chum escapements; therefore, Kagan Bay on the south side of Maude Island and the east side of the inlet are closed. This fishery is to clean up chum surplus in front of Queen Charlotte City; sub-areas 2-8 and 2-10 will also open to nets 1230 hrs Tues Oct 9 until 1230 hrs Wed Oct 10. The Crescent Inlet boundary is 1/3 up the inlet. There is also a boundary situated in front of the Salmon River. Actual boundaries are available on the grounds.

Oct 09: Area 2W - Open to nets 0800 hrs to 1800 hrs Wed Oct 10 in sub-area 2-67 (Trounce Inlet). This fishery is directed at a small surplus of chums that was identified early this afternoon.

Oct 11: Areas 1, 2E and 2W - Closed to nets 1800 hrs Wed Oct 10.

Oct 12: Areas 1 and 2W - Closed for the balance of the 1984 season. Area 2E - Skidegate Inlet - No further fisheries expected, next announcement Monday afternoon. A 24-hr notice will be given should an opening be announced.

Oct 15: Area 2E - No major improvement in stocks over the weekend. No further openings anticipated. Monitoring will continue, next announcement Fri Oct 19. If no major improvements are seen by this time Area 2E will be closed for the balance of the season.

Oct 19: Area 2E - Open to nets 0800 hrs to 1800 hrs Mon Oct 22 for 10 hrs in sub-areas: (a) 2-1 - Skidegate Inlet compliance boundary in effect to protect incoming coho stocks. There are indications of a small chum surplus in recent food fishing. Boundaries same as Oct 9-10 opening. (b) 2-8; 2-10 - Darwin Sound - same creek boundaries as last opening and may be adjusted on short notice. NOTE: At the completion of this opening the Queen Charlotte Islands will be closed for the balance of the season to all salmon fishing.

Oct 22: Sub-areas 2-1, 2-8, 2-10 are closed as scheduled tonight at 1800 hrs. Queen Charlotte Islands are closed for the balance of the season tonight at 1800 hrs.

Oct 23: Area 2E - Closed to nets as scheduled 1800 hrs Mon Oct 22. The Queen Charlotte Islands are now closed for the balance of the season.

Appendix 2. Area 1 salmon expectations and fishing plans, north coast Queen Charlotte Islands, 1984.

SPECIES	CYCLE YEAR CATCH		CYCLE YEAR ESCAPEMENT		1984 ESCAPEMENT		EXPECTATIONS
					EXPECTED	OPTIMUM	
Sockeye	(1980)	78,000		34,000	45,000	55,000	No anticipated fishery on local stock. Commercial catch is dependent on strength of passing stocks and subject to chinook interception levels.
	10 year average	45,000	10 year average	29,000			
Pink	(1982)	74,000		211,000	300,000	1,000,000	No anticipated fishery.
	5 cycle average	211,000	5 cycle average	241,000			
Chum	(1980)	No fishery		14,000	28,000	85,000	No anticipated fishery.
	10 year average	17,000	10 year average	60,000			

PROPOSED FISHING PATTERN

OBJECTIVE:	To conserve local stocks. Net fishing times, intended to provide for local fisheries on passing stocks, will be restricted so as not to encourage accelerated interceptions and to limit the chinook by-catch to less than 5,000.
EFFECTIVE DATE	ACTION
All season	Naden Harbour (sub-area 1-4), Masset Inlet and Masset Sound (sub-area 1-6) closed to all gear.
July 15 - July 21	Open to net fishing one day per week in 1-2, 1-3 and 1-7. Extensions will be considered during peak abundances of passing sockeye stocks.
July 22 - August 11	Open to net fishing one day per week in sub areas 1-2 and 1-7. Extensions will be considered during peak abundances of passing sockeye stocks. Area 1-3 remains closed for protection of pink stocks.

Appendix 3. Area 2W salmon expectations and fishing plans, west coast Queen Charlotte Islands, 1984.

SPECIES	CYCLE YEAR CATCH		CYCLE YEAR ESCAPEMENT		1984 ESCAPEMENT EXPECTED	1984 ESCAPEMENT OPTIMUM	EXPECTATIONS
Sockeye	(1979)	180,000		2,000	4,000	10,000	No anticipated fishery on local stocks. Commercial catch is dependent on the strength of passing stocks and is subject to chinook interception levels.
	(1980)	26,000		3,000			
	10 year average	65,000	10 year average	3,000			
Pink	(1982)	18,000		112,000	175,000	500,000	Moderate surpluses anticipated in some areas. Escapements in other areas are below requirements.
	5 cycle average	109,000	5 cycle average	126,000			
Chum	(1980)	54,000		89,000	79,000	200,000	Although overall expected abundance is below escapement requirements, small surpluses may be available in isolated inlets.
	(1981)	6,000		48,000			
	10 year average	27,000	10 year average	52,000			

PROPOSED FISHING PATTERN

OBJECTIVE: To conserve local stocks. Net fishing times, intended to provide for local fisheries on passing stocks, will be restricted so as to limit the chinook by-catch to less than 5,000 as part of a reduction of recent years' accelerated catch.

EFFECTIVE DATE	ACTION
July 15 - August 4	Open to net fishing two days per week in Rennell Sound (sub-area 2-44) and Kano Inlet (sub-area 2-43) only.
August 26	Depending on assessments of pink salmon, small surpluses may be available in Security Inlet and West Skidegate Inlet.
September 16 - UFN	Depending on assessments of chum salmon, short openings may occur on or after September 16 in Tasu, Port Chanal and Flamingo Inlets. Other fishing strategies may be applied to smaller surpluses after consultation with the Queen Charlotte Advisory Committee.

Appendix 4. MRP sampling of chinook from July 29 - 31 fishery in Rennell Sound, 1984 (J. Thomas, MRP, pers. comm.).

No. Seines Sampled	% of Fleet	Estimated No. Chinook/Seine (over 5 lbs.)	Estimated Chinook Catch (MRP)	Hail Catch	CWT Mark Incidence	Cumulative Estimated Chinook Catch to Date Area 2W
13	38	115	3,910 [a]	2,857	2.9%	5,200 [b]

[a] ± 215 at 90% confidence interval.

[b] This estimate does not take into account the probable underestimate of previous weeks' catches, which would probably bring the cumulative total to over 5,600 chinook.

Appendix 5. Area 2E salmon expectations and fishing plans, east coast Queen Charlotte Islands, 1984.

SPECIES	CYCLE YEAR CATCH		CYCLE YEAR ESCAPEMENT		1984 ESCAPEMENT		EXPECTATIONS
					EXPECTED	OPTIMUM	
Pink	(1982)	1,000		167,000	300,000	750,000	Brood year escapement well below average. Small surplus may be available in one of the isolated inlets.
	5 cycle average	417,000	5 cycle average	414,000			
Chum	(1980)	119,000		161,000	250,000	400,000	An average return is expected from the predominant age 4 year class. Small surplus may be available. A limited fishery is anticipated on enhanced returns.
	(1981)	38,000		165,000			
	10 year average	109,500	10 year average	148,800			
	[a]Pallant Creek Hatchery Stocks				30,000[a]	30,000[a]	

PROPOSED FISHING PATTERN

EFFECTIVE DATE	ACTION
August 19	Depending on assessments of pink salmon, a small surplus may be available in Darwin Sound.
September 16	Depending on assessments of chum salmon, short openings may occur on or after September 16 in Skidegate Inlet, Skincuttle Inlet and Chumshewa Inlet (Pallant Creek Hatchery).

Appendix 6. Fishery boundary descriptions for Area 2E by M.U. and opening (pers. comm. S. Hahn).

August 29, M.U.'s 2-8, 2-10, Darwin Sound pink salmon fishery:

north and east boundary	- Porter Head on Tangil Peninsula true east to surfline, south along surfline to a point true east of Fuller Point (Lyell Island) then true west to Fuller Point; straight line from Darwin Point (Moresby Island) to Richardson Point (Lyell Island), ie. south entrance to Darwin Sound.
south boundary	- Atli Inlet closed south of a line from Tsinga Point true east to a boundary sign on the opposite shore (NB. surfline runs in a line from Gray Point on Moresby Island to Scudder Point).
creek boundary	- head of Crescent Inlet closed by a line between markers.

September 16, M.U. 2-1, Skidegate Inlet chum salmon fishery:

west boundary	- McLellan Point (Moresby Island) true north to a boundary sign on the opposite shore.
creek boundaries	- 1/2 mile radius off: Sachs Creek, Haans Creek, MacMillan Creek. - triangular boundary off Deena River, from marker on S.E. corner of Sandilands Island southeast to Moresby shoreline west of Deena River mouth, and from S.E. corner of Sandilands Island southeast to a marker on Moresby Island near South Bay Dump. - Long Inlet stream boundaries as follows: from a marker on Moresby Island near Lance Point (northeast shore of Christie Bay) to the west end of Legace Island; east end of Legace Island to marker on west side of Claudet Island; easternmost point of Claudet Island to a marker on Withered Point, Lina Island; from a marker near the easternmost point of Lina Island then northeast to a marker on the old government wharf. - boundary off Skidegate Narrows Creeks running north-south between 2 markers approximately 0.8 km (1/2 mi) east of McLellan Point.
east boundary	- Lawn Point southerly along the surfline to a point true east of Spit Point, Moresby Island, then to Spit Point.

Appendix 6 (cont'd).

September 26, M.U. 2-1, Skidegate Inlet chum salmon fishery:

west boundary	- line between two markers running north-south approximately 4 km (2.5 mi) east of McLellan Point.
east boundary	- from Lawn Point then along surfline to a point true east of Spit Point, then to Spit Point.
creek boundaries	- 0.8 km (1/2 mi) radius off Sachs Creek, Haans Creek and MacMillan Creek. - triangular boundary off Deena River as per September 16 boundary. - Long Inlet modified boundary: area open east of a line from Christie Point on Graham Island south-easterly to a boundary on Graham Island opposite; otherwise, as per September 16 boundaries. - Slatechuck Creek mouth boundaried off by two markers placed across mouth of creek.

September 26, M.U.'s 2-3, 2-4, Cumshewa Inlet chum salmon fishery:

east boundary	- a line from Gray Point along the surfline to a point true east of Skedans Point, then true west to Skedans Point.
west boundary	- a line from a marker on Moresby Island approximately 0.8 km (1/2 mi) south of Barge Point across to a marker on the northwestern-most point of Louise Island opposite.
creek boundaries	- 0.8 km (1/2 mi) radius off Mathers Creek. - a straight line between yellow markers and the head of Cumshewa Inlet immediately west of Davey Inlet.

September 30, M.U. 2-6, Selwyn Inlet chum salmon fishery:

east boundary	- a line from Nelson Point on Louise Island south to Heming Head on Talunkwan Island.
west boundary	- a line from a marker on Kilmington Point south to a marker near the northwest corner of Talunkwan Island.
creek boundary	- Thurston Harbour closed by boundary signs across harbour entrance.

Appendix 6 (cont'd).

September 30, M.U. 2-1, Skidegate Inlet chum salmon fishery:

east boundary - Lawn Point to a point true east of Spit Point, then to Spit Point.

west boundary - line between markers from Graham to Moresby Island approximately 4 km (2 1/2 mi) east of McLellan Point.

creek boundaries - 0.8 km (1/2 mi) radius off Haans, Sachs and MacMillan creeks.
- Long Inlet boundary as follows: closed inside a box boundary bounded on the east by a line from Anthracite Point on Graham Island easterly to the north corner of Christie Bay shoreline, and on the west by a line between markers on either side of Long Inlet from Young Point to the opposite shore.
- Deena River - triangular boundary still in effect.

October 9, M.U. 2-1, Skidegate Inlet chum salmon fishery:

south and east boundary - compliance boundary for conservation of coho salmon from Image Point on Graham Island to Kwuna Point on Moresby Island, then westerly from Kwuna Point to Maude Island near Robber Island (ie. waters south of Maude Island closed).

west boundary - straight line between markers on Graham Island to Moresby Island approximately 4 km (2 1/2 mi) east of McLellan Point.

creek boundary - Deena River triangular boundary in effect.

October 9, M.U.'s 2-8, 2-10, Darwin Sound chum salmon fishery:

east boundary - line from Porter Head on Tangil Peninsula true east to surfline, thence southerly along the surfline to a point true east of Fuller Point, thence true west to Fuller Point on Lyell Island.

north boundary - waters of Atli Inlet closed south of a line from Tsinga Point on Lyell Island easterly to a marker on the shoreline opposite.

south boundary - line from Darwin Point on Moresby Island to Richardson Point on Lyell Island.

Appendix 6 (cont'd).

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creek boundaries
- Crescent Inlet and Klunkwoi Bay closed by a line between markers approximately 1/3 of the way up the inlet.
- Klunkwoi Bay closed by a box boundary bounded on the north by a line from Crescent Point on Moresby Island easterly to a marker on Richardson Island opposite, on the east by a line between markers on the southernmost point of Richardson Island to Lyell Island opposite, and on the south by a line from a marker on Amur Point on Moresby Island easterly to a marker on the Lyell Island shoreline opposite.

October 22, M.U. 2-1, Skidegate Inlet chum salmon fishery:

- boundaries as per October 9 opening.

October 22, M.U.'s 2-8, 2-10, Darwin Sound chum salmon fishery:

east boundary
- a line from Porter Head on Tangil Peninsula true east to surfline to a point true west of Fuller Point, then to Fuller Point on Lyell Island.

north boundary
- waters of Atli Inlet closed south of a line from Tsinga Point on Lyell Island easterly to a marker on the shoreline opposite.

south boundary
- a line from Darwin Point on Moresby Island to Richardson Point on Lyell Island.

creek boundaries
- varied as follows during different times:
  1) 0800-1300 hrs. - Klunkwoi Bay closed by a box boundary as per October 9 except bounded on the south by a line from Gil Islet off Moresby Island easterly to Richardson Island opposite.
  2) 1330-1730 hrs. - modified box boundary: from Bent Tree Point to marker on Klunkwoi Rocks to a boundary sign on Moresby Island in a westerly direction.
  3) 1730-1830 hrs. - modified box boundary: from Bent Tree Point to a boundary sign at the northern entrance to Anna Inlet.

Appendix 7. Chronological assessment records for Skidegate Inlet chum salmon stocks, 1984 (R. Brahniuk, DFO, pers. comm. ; data sources are shown in parentheses and explained in footnote 'a').

Date	Stock assessment record
July 28	- Deena - IFF yielded 0 catch
Aug 20	- Deena - 30 silver bright chum, 5 pink gillnetted (IFF)
	- Honna - 7 silver bright chum, 5 pink gillnetted (IFF)
Aug 27	- Deena - 3 large schools for an estimated 6,000 chum observed off river (BCP overflight); best viewing conditions at low slack tide (P)
Sept 3	- Slatechuck - fair showing of jumpers, with an estimated 3-400 chum out front (P)
	- Deena - fair showing of chum jumpers
	- Lagins - estimated 100 chum at mouth
	- Renner Pass-Slatechuck - good showing of jumpers
	- scales samples Sept 3 (B):

Gear	% Age 3	% Age 4	% Age 5
GN	65	35	
SN	41	57	2

Date	Stock assessment record
Sept 4	- Renner Pass - estimated 2,000 chum (P)
	- Kagan Bay - estimated 2,000 chum
	- Deena - estimated 3,000 chum
	- Skidegate - estimated total to date of 10,000 chum outside, 1,600 up stream
	- Slatechuck - jumpers off mouth, estimated 3,000 chum in creek
Sept 5	- Deena - estimated 1,000 chum at mouth (FO overflight)
	- Slatechuck - estimated 3,000 chum outside
	- Lagins - nothing observed
Sept 7	- Deena - estimated 7,000 chum in river, 5,000 off mouth (P)
	- Skidegate Inlet run timing appeared to parallel that of 1982 (FO)
	- Tarundl - estimated 800 chum (P)
Sept 8	- Deena - estimated 5,000 chum off mouth, big schools out front (P)
	- Slatechuck - estimated 3-4,000 chum in stream
Sept 10	- good showing of chum jumpers and finners at North Maude Island to Renner Pass (P)
	- chum jumpers observed on south Maude Island
	- good showing of jumpers at Deena mouth and South Bay
	- fish showing at Village appeared mostly bright (LF)
	- Slatechuck - estimated 4,100 fresh/4,650 chum in river, good showing of jumpers off mouth (P)
Sept 11	- Lagins - estimated 2-300 chum at mouth (P)
	- fair showing of jumpers and finners from Indian Cabin to head, estimated at 4,000-5,000 chum
	- Saltspring Bay - good showing of chum jumpers
	- Slatechuck - estimated 3-4,000 chum off creek
	- Renner Pas - nothing observed
	- estimated over 10,000 chum jumpers on north side of Maude Island, with one school of 4,000-5,000 chum
	- Deena - good showing off mouth
	- fish present in Renner Pass and Maude Island
Sept 12	- Skidegate - total to date estimated escapement of 25,000 (FO), compared to 27,700 in 1982, 7,600 in 1983, 5,000 in 1981
	- Deena - estimated 13,000 chum in stream, 2,000 off mouth (P)
	- Slatechuck - estimated 7,000 chum in stream, 3-4,000 outside
	- good showing of jumpers on north side of Maude Island and south side of South Bay dump
	- Lagins - good showing of fish with one school estimated at 4,000 chum
Sept 15	- Renner Pass - 47 chum, 7 coho gillnetted (IFF)
Sept 16	- Christie Bay - fish on outside bright, fish inside darker (IFF)
Sept 19	- Slatechuck - estimated 4,500 fresh/11,500 chum in stream, 3-4,000 off mouth (P)
	- Deena - estimated 2-3,000 chum off mouth (FO overflight)

Appendix 7. (cont'd)

Date	Stock assessment record
Sept 20	- Long Inlet - estimated 3,000 chum off mouth (P)
	- Honna - estimated 75 fresh/2,100 chum in river
	- Deena - estimated 5,000 fresh/18,000 chum in river
	- Slatechuck - estimated 1,500-2,000 chum at mouth (FO overflight)
	- Lagins - estimated 2-3,000 chum at mouth
	- Indian Cabin - estimated 1,000-1,500 chum at mouth
	- Saltspring - estimated 4-500 chum at mouth
	- Maude Island - 3 jumpers, 2 schools of 50 chum observed on north side
	- run timing essentially over for Deena, Honna and Tarundl chum stocks (FO)
Sept 22	- fish showing on north side of Maude Island (P)
	- a few fish showing off Christie Bay and Slatechuck, poor viewing conditions
	- Slatechuck - light showing of jumpers off mouth of Renner Pass, 3 jumpers observed
	- north shore Maude Island-Christie Bay - good showing of jumpers by log dump
	- fair showing of jumpers in Long Inlet
	- Lagins - estimated 8,800 chum in creek
	- 20 chum jumpers observed at Village (CF)
	- good showing of salmon from Renner Pass to log dump
	- Slatechuck - estimated 3,000 fresh/14,500 chum in stream
	- Deena - nothing observed off river (IFF fisherman)
	- estimated 7-8,000 chum from north Maude Island to log dump (P)
Sept 23	- Lagins - estimated over 8,800 chum in creek, 2-3,000 off mouth; fish moving in with tide (joint stream inspection - FO, CF)
Sept 24	- Skidegate - total estimated escapement to date of 47,000 chum (FO)

Date	Stock assessment record
	- Deena, Honna and Tarundl chum runs over and escapement at below optimum levels; Skidegate Inlet requires 40,000 additional chum for optimal spawning
Sept 26	- good showing of chum jumpers at boundary (P)
Sept 27	- Slatechuck - majority of chum semi-bright, fish on outside mostly bright (P)
	- Scale sample: Skidegate Inlet (commercial fishery)

Date	Sample size	% Age 3	% Age 4
Sept 26/27	98	64	36
Sept 27	45	51	49

- scale sample: Slatechuck

Date	Sample size	% Age 3	% Age 4	% Age 5
Sept 27	49	51	45	5
Oct 1	25	64	36	

Date	Stock assessment record
Sept 28	- Lagins - estimated 4,300 fresh/13,000 chum in creek (P), 8-10,000 chum at head; optimum 30,000 (FO)
	- Long Inlet - estimated total to date of 15-20,000 chum
	- good showing of chum jumpers from Young Point to head of Long Inlet (P)
Sept 29	- Long Inlet - good showing of chum (P)
	- Maude Island - nothing observed
	- Kagan Bay - few chum observed
Sept 30	- Long Inlet - fish all show, no body under jumpers (P)
Oct 1	- Slatechuck - estimated 200 fresh chum
Oct 2	- Indian Cabin - estimated 2,450 fresh/4,150 chum in creek, a few jumpers outside (FO); optimum 8-10,000
	- Slatechuck - estimated 2,000-2,500 fresh/16,500 chum in creek; optimum 15-20,000
	- Saltspring - estimated 330 fresh/630 chum in creek
	- Christie Bay - good showing of chum jumpers in A.M. (P)
	- Lagins - estimated 4,000 fresh/17,300 chum in creek (P)
	- Long Inlet - estimated 3-4,000 chum in inlet, good showing of jumpers in Christie Bay area

Appendix 7. (cont'd)

Date	Stock assessment record
Oct 3	- Slatechuck - estimated 3,500 fresh/18,000 chum in stream, a few loose eggs showing (P)
	- good showing of chum jumpers off Christie Bay
	- Skidegate Inlet - weather conditions poor, fish not showing well
Oct 4	- Skidegate - estimated total to date escapement of 62,000 chum (FO)
Oct 5	- Long Inlet - estimated 2,000 chum outside, fair showing jumpers, 3-4,000 chum observed between Anthracite Point and Slatechuck (P)
	- Lagins - estimated 2,500-3,000 fresh/19,900 chum in creek, a few lose eggs in gravel
	- Indian Cabin Creek - estimated 1,200 fresh/5,350 chum in creek
Oct 6	- Kagan Bay - fair showing of jumpers(P)
	- Christie-Renner - good showing of jumpers
Oct 7	- Skidegate - poor weather conditions (P)
	- Kagan Bay - few jumpers showing
Oct 8	- Lagins Creek - estimated 1,200 fresh/21,100 chum in creek (P)
	- Long Inlet - estimated 2-3,000 chum in inlet
	- Christie Bay-Renner Pass - 3,400 chum observed in 30-40 schools
	- Indian Cabin - few jumpers observed off creek
Oct 13	- Long Inlet - estimated 3-4,000 chum in inlet (P)
	- a few jumpers observed around Legace Island
	- 2 jumpers observed off Anthracite Point
Oct 14	- Kagan Bay - a few jumpers observed (P)
Oct 15	- Indian Cabin - estimated 900 fresh/6,250 chum in creek
	- Saltspring - estimated 270 fresh/1,200 chum in stream
	- Mud Bay - estimated 210 fresh/380 chum in creek
	- fair showing of jumpers between Christie Bay and Renner Pass estimated at 2-3,000 chum
	- Long Inlet - fair showing of jumpers estimated at 2-3,000 chum
Oct 17	- Slatechuck - estimated 2,200 fresh/20,200 chum in stream (P)
	- East Narrows - estimated 100 fresh/450 chum in creek
	- Grays Cabin - estimated 220 fresh/410 chum in creek
	- Long Inlet - gillnetted 40 chum in inlet (IFF)
	- Skidegate Inlet - estimated total to date escapement of 77,000 chum
	- no jumpers showing in Kagan Bay or Long Inlet in A.M.
Oct 19	- Deena - estimated 2,000 coho and 550 fresh chum in river (FO)
Oct 22	- Lagins - estimated 1,900 fresh/26,900 chum in stream, 1,000-1,500 at mouth (P)
	- during slack tide at noon, estimated 12-15,000 fish behind boundary

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[a] Data sources: IFF - Indian food fishery, BCP - B.C. Packers, P - patrolman, FO - fishery officer, LF - local fisherman, CF - commercial fisherman, B - biologist.

Appendix 8. Chronological assessment records for Cumshewa Inlet and Selwyn Inlet chum salmon stocks, 1984 (R. Brahniuk, DFO, pers. comm. ; data sources are shown in parentheses and explained in footnote 'a').

Date	Stock assessment record
Aug 30	- a few chum observed moving north through Louise Narrows
Sept 4	- Pallant - estimated 1,000 chum at sea pens, 200 coho at bottom of falls, odd pink salmon observed (P)
Sept 5	- 4 jumpers observed at mouth of Cumshewa Inlet (FO overflight)
	- 2 jumpers observed at mouth of Selwyn Inlet under poor viewing conditions
Sept 6	- few jumpers starting to show in Selwyn and Sewell Inlets (P)
	- Big Goose - estimated 500 chum up creek, 2-300 at mouth
	- Pacofi - estimated 600 chum up creek, 25 at mouth
	- Dana #1 - estimated 250 chum up creek
Sept 7	- Thurston Harbour - estimated 3,500 chum in Creek (P)
	- good showing of chum jumpers in Selwyn Inlet, particularly off Little Goose with an estimated 2,000 chum observed
	- no chum jumpers observed in Cumshewa (Arrow Post)
	- Pallant - no chum, 25-30,000 pink, 700-900 coho estimated through stream float (FO stream float)
	- report of chum salmon present in Little Goose at end of August (QCI advisor)
Sept 10	- couple chum jumpers observed in Cumshewa Inlet and at Moresby Camp (P)
	- Selwyn Inlet - total to date estimated escapement of 1,800 chum in creek, 3-4,000 outside
Sept 11	- Selwyn - fish on south shore outside Thurston Harbour (BCP overflight)
	- Pacofi - a couple jumpers
	- Big Goose - estimated 2,000 chum on flats, 3,000 out front
	- Sewell - estimated 2-3,000 chum a yellow can buoy, good showing at head around beacons, several jumpers observed outside
	- Lagoon - jumpers observed and quite a few finners on both shores, a few fish on flats
	- Cumshewa - 1 jumper outside
	- Thurston Harbour - fair showing of chum jumpers
	- Heming Head - 4 chum jumpers observed
Sept 12	- test fishery commenced in Cumshewa Inlet (B)
Sept 13	- Selwyn - few chum jumpers in Lagoon Inlet, rest of area quiet (P)
Sept 14	- Cumshewa - no showing of jumpers (Arrow Post)
	- Pallant - estimated escapement of 180 chum up to September 11 (Pallant hatchery)
Sept 16	- Dana Pass - estimated 1,500 chum outside (P)
	- Dana #1 - estimated 1,025 chum up, 400 at mouth
	- Dana #2 - estimated 25 chum in creek
	- Dana #3 - estimated 6 chum in creek
	- Pacofi - estimated 1,500 chum in creek
	- Sewell Inlet - 2 chum jumpers observed off Waterfall Creek
	- Selwyn - no showing
Sept 17	- Big Goose - estimated 300 chum in creek (P)
	- Sewell Inlet - estimated 1,500 chum at mouth of inlet
	- Selwyn Inlet - few scattered chum jumpers off Rockfish Harbour, Selwyn Point and off Lagoon Inlet
	- Waterfall Creek - estimated 900 chum up creek; 2 jumpers observed outside
	- Selwyn Inlet escapement to date estimated at 4,500 chum in creeks, not including Sewell Head and Lagoon Inlet
	- good showing of chum jumpers off Lagoon Inlet and Louise Island shore; estimated 450 chum up Lagoon Creek
	- Cumshewa-Selwyn - no showing of chum salmon under poor viewing conditions (BCP overflight)
Sept 18	- Burnaby Narrows - observed 6 chum jumpers (P)
Sept 19	- Sewell Head Creek - estimated 450 chum in creek (P)
	- good showing of jumpers at south entrance to Louise Narrows estimated at over 3,000 chum

Date	Stock assessment record
Sept 19 (cont'd)	- 15 jumpers observed outside entrance to Lagoon Inlet by Louise Island shore; estimated at 2-3,000 chum
	- total to date estimated escapement to Selwyn-Sewell of 7,500 chum in creek, 6-8,000 chum outside
	- Little Goose - estimated 230 chum up, fair showing of jumpers outside
	- Thurston Harbour Creek - estimated 5-6,000 chum up creek, 100 at mouth (CF)
	- 20 chum jumpers observed between Little Goose and Louise Narrows (BCP overflight)
	- Thurston Harbour - 100 fish observed off creek mouth
	- Big Goose - 10 chum jumpers observed
Sept 20	- Selwyn-Sewell - total to date estimated escapement of 5,100 chum in streams, 5,000 behind creek boundaries (FO/P)
	- fair showing of chum in Selwyn Inlet outside boundaries (P)
	- Pallant Creek - nothing observed at mouth (FO overflight)
	- 1 chum jumper seen off Beattie Anchorage
	- Waterfall Creek - estimated 1,500 chum at mouth
	- Sewell Head - estimated 2,000 chum on flats off camp
	- Lagoon Inlet - nothing showing at mouth
	- Big Goose - nothing observed at mouth
	- Little Goose - estimated 1,000 chum at entrance to bay
	- Pacofi Creek - estimated 600 chum at mouth
	- Selwyn Point - 5 chum jumpers, 1 school estimated at 300 chum
	- Sewell Point to entrance to Lagoon Inlet - 5 chum jumpers observed; 2 schools estimated at 500 chum each
Sept 22	- Cumshewa - estimated escapement of 1,250 chum through fence (optimum 25-30,000) (Pallant hatchery)
Sept 23	- Big Goose Creek - estimated 1,900 chum up creek (P)
	- jumpers showing at entrance to Lagoon Inlet
	- Waterfall Creek - estimated 1,400 chum
	- Sewell Inlet Creek Hd - estimated 1,000 chum - fair showing outside
	- scattered schools along Louise Island shore, estimated 5-6,000 chum
	- Lagoon Creek - estimated 100 fresh/550 chum, 500 at mouth
	- Sewell Inlet - estimated 2-3,000 chum inside boundary
	- Cumshewa - best showing to date of chum jumpers off Beattie Anchorage; 2 schools of chums at Pallant sea pens estimated at 500 (test fishing vessel)
	- few jumpers showing along Chadsey shoreline
	- Pallant fence count of 1,500 chum (Pallant hatchery)
	- Cumshewa - estimated 8,000 chum at Beattie Anchorage; observed jumpers in Louise Narrows
	- Pacofi - 100 chum estimated on flats (P)
	- Dana Inlet - 20 chums jumpers observed; first signs of fish in Dana
Sept 24	- total to date estimated chum escapement (FO):

Date	Stream	Escapement	Optimum
Sept 24	Lagoon Inlet Cr.	550	25,000
23	Sewell Inlet Cr.	1,500	10,000
23	Waterfall	1,400	3,000
22	Big Goose	1,900	7,000
21	Little Goose	230	2,000
21	Thurston Harbour	750	3,000
16	Pacofi	1,500	3,500
16	Data Pass #1	1,025	3,000
	Total to Date	9,000	54,000

Date	Stock assessment record
	- Sewell Inlet - estimated 2-3,000 chum inside boundary (P)
	- Lagoon Inlet - estimated 500 chum at mouth
	- Selwyn Inlet - good showing of jumpers outside creek boundaries
	- good showing of jumpers from Sewell Point to entrance of Lagoon Inlet
	- good showing in Selwyn Inlet, could be partly Cumshewa fish
	- Pacofi - estimated 3,000 chum outside, little showing inside
	- Trainer Creek - estimated 3,000 chum

Appendix 8. (cont'd)

Date	Stock assessment record
Sept 24 (cont'd)	- Big Goose - estimated 500 chum
	- Selwyn - estimated minimum of 5,000 chum between Sewell Point and entrance to Lagoon Inlet
	- Cumshewa - intense flying-no jumpers observed
	- Oliver Island - estimated 600-1,000 chum in one school
	- Chadsey - observed 1 chum jumper
	- Beattie Anchorage - a few jumpers observed
	- Lagoon - estimated 1,000-1,500 chum in entrance, 500 chum off mouth, with 1 jumper observed in front
	- Sewell Point - 4 schools observed for an estimate of 3,000+ chum
	- Sewell Inlet - a few jumpers observed under choppy water conditions
	- Thurston Harbour - estimated 1,000 chum in 1 school holding at mouth of inlet
	- 5-6 schools observed between Pacofi and Talunkwan , 1 school estimated at 1,000 chum
	- Cecil Cove - estimated 2,000 chum at entrance to Little Goose
Sept 26	- gillnet set at entrance to Lagoon Inlet 80% dark, some very ripe (test fishery vessel)
	- Lagoon Inlet - estimated 300 chum inside, 550 outside (FO overflight)
	- Sewell Point - estimated 600 chum under poor viewing conditions at Sewell Head
	- Pacofi - estimated 300 chum
	- Little Goose - estimated 500 chum
	- Big Goose - estimated 75 chum
	- Thurston Harbour - estimated 450 chum
	- Dana #1 - estimated 100 chum
Sept 27	- Sewell Head Cr - estimated 500 fresh/2,000+ chum (P)
Sept 28	- observed 4 schools of chum at mouth of Lagoon Inlet with 50 chum per school under poor viewing conditions (FO overflight)
	- fewer jumpers observed than previously, good gillnet test sets
	- Little Goose - estimated 450 chum up stream, couple jumpers outside (P)
	- good showing of chum salmon inside Selwyn Inlet; high CPUE relative to Cumshewa Inlet (test fishing vessel)
	- good quality, bright chum coming in from outside indicating fresh influx of fish
	- good showing of jumpers in Selwyn Inlet, little showing inside creek boundaries (FO)
	- Selwyn total to date estimated escapement of over 11,000 (optimum of 50,000)
	- Lagoon Inlet - estimated 2,000 chum inside at head, 400 fresh/950 chum in creek (P)
	- estimated 2,500-4,000 chum off Selwyn Point to Talunkwan Island
Sept 29	- jumpers observed at Sewell
	- Lagoon Inlet - estimated 1,500-2,000 chum at head, 2,000 outside, 10 jumpers observed (FO & QCI advisor overflights)
	- Sewell Head - jumpers observed in lagoon at head of Sewell
	- Little Goose - estimated 2,500 chum at entrance, 250 at mouth
	- Big Goose - estimated 2-3,000 chum at entrance, 3-4,000 at mouth
	- Selwyn Point-Pacofi - estimated 3-4,000 chum, 800-1,000 on flats
	- Dana #1 - estimated 4-500 chum at mouth
Sept 30	- escapement to date through Pallant fence approximately 3,300 chum (Pallant hatchery)
Oct 1	- Selwyn - no improvement in chum assessment (BCP overflight)
Oct 2	- Lagoon Creek - estimated 1,900 fresh/12,850 TTD chum in stream, 1-2,000 chum observed in inner bay, 3-5,000 chum moving in scattered schools in outer bay (P)
	- Big Goose - estimated 500 fresh chum for a total to date of 3,150 chum; 6-8 small schools at mouth

Appendix 8. (cont'd)

Date	Stock assessment record
Oct 2 (cont'd)	- Sewell Camp - estimated total to date of 75 fresh/102 chum
	- Sewell Inlet - only 1 jumper observed, fish may have moved into Sewell Head Creek
	- Pallant Fence - total to date escapement of 3,800 chum over fence (Pallant hatchery)
Oct 3	- Lagoon Inlet - estimated 2-3,000 chum outside (P)
	- 3 jumpers observed off Selwyn Point
	- Pacofi - estimated 500 chum at mouth
	- Pallant - fence pulled at hatchery due to high water; escapement unknown but estimated during this period (Pallant hatchery)
	- Cumshewa - 14 jumpers observed between Beattie Anchorage and Kitson Point
	- Pallant - a few jumpers observed at sea pens
Oct 5	- Cumshewa - fair showing of jumpers in holding area (test fishing vessel)
	- Sewell Inlet Creek Head - estimated 4,000 chum up creek
	- Cushewa Inlet scales (B):

Date	Sample	Age 3 (%)	Age 4 (%)	Age 5 (%)
Sept 13	25	60	40	
Sept 19-23	123	62	38	
Sept 24	25	80	20	
Sept 26-27	99	65	35	
Sept 28-30	98	57	42	1
Oct 2	99	65	35	
Oct 7	25	52	44	4
Oct 16-21	121	49	50	1

- Selwyn Inlet scales:

Date	Sample	Age 3 (%)	Age 4 (%)	Age 5 (%)
Sept 25-26	72	52	47	1

Date	Stock assessment record
Oct 7	- fair chum showing reported off Little Goose (F)
Oct 8	- Cumshewa - 7 jumpers observed in one hour in holding area-only fair showing (test fishing vessel)
	- Pallant - counting fence still out
	- Data #1 - estimated 1,200 fresh/2,300 chum in stream
Oct 15	- Chadsey - estimated 200 chum up creek (P)
	- Carmichael - estimated 75 chum up creek
	- Pallant - counting fence reinstalled on October 14, fence count to date was approximately 4,000 chum TTD estimated escapement over fence was less than 10,000 chum; optimum 25-30,000 (Pallant hatchery/FO)
Oct 18	- Sewell RH - estimated 100 chum for a TTD of 125 in creek (P)
	- Waterfall Creek - estimated 395 live chum total to date escapement of 1,700 chum
	- Sewell LG #3 - estimated 55 chum, TTD 300 chum in creek
Oct 19	- Sewell Head Creek - estimated 2,300 chum, total to date of 6,000 chum(P/FO)
	- Selwyn Inlet - estimated escapement to date of 24,400 chum
	- Pallant - estimated to date of 10,000 chum
	- Big Goose - estimated escapement of 7,000 chum to date
Oct 22	- Sewell LH #1 - estimated 250 fresh/400 chum in creek (P)
	- Little Goose - estimated 600 fresh/2,000 chum in creek
	- Pallant Creek foot survey - estimated 4,500 chum above fence, 2,500+ below fence (P/FO)
	- 3,500 females removed for egg take

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[a] Data sources: P - patrolman, FO - fishery officer, BCP - B.C. Packers, B - biologist, CF - commercial fisherman, F - fisherman, Arrow Post - DFO fishery vessel.

Appendix 9. Chronological assessment records for Darwin Sound and Atli pink and chum salmon stocks, 1984 (R. Brahniuk, DFO, pers. comm. ; data sources are shown in parentheses and explained in footnote 'a').

Date — Stock assessment record

Aug 20
- Darwin Sound - scattered pink jumpers observed, estimated 14,000 pink outside (P)
- Echo Harbour - estimated 3,500 pink in harbour

Aug 23
- Echo Harbour - estimated 5,300 pink in harbour, 1,000 outside (P)
- Crescent Inlet - estimated 15-2,000 pink in inlet (FO)
- McEchran Cove - 8 schools of pink salmon observed for an estimated 1,000+ fish
- Echo Harbour - 3 schools observed for an estimated 700+ pink salmon

Aug 24
- Echo Harbour - estimated 3,000 pink in front (BCP overflight)
- Crescent Inlet Creek - estimated 800 pink in creek, 6,500 out front (P)
- Darwin Sound - a few jumpers observed

Aug 27
- Echo-Lockeport - no sign of fish
- Crescent Inlet - estimated 1,500-2,000 pink outside
- Echo Harbour - total to date estimated escapement of 18,000 pink (FO)

Aug 28
- Darwin Sound - good show of jumpers under ideal viewing conditions (high slack) (P)
- Salmon River - estimated 11,500 pink in river, optimum 10,000 (FO)
- Crescent Inlet - estimated 14,500 pink in creek, 1,800 at mouth - optimum 20,000
- Echo Harbour - estimated 18,000 pink in creek, 1,000 at mouth - optimum 15,000
- Darwin - fish generally not showing (P)
- Echo Harbour Creek - 500-1,000 pink observed at bottom pool seal predated
- Darwin - good showing with an estimated 20,000 pink observed

Aug 29
- many small schools observed under good viewing conditions in middle of Darwin Sound from entrance of Logan Inlet past Echo Harbour to the north side of Shuttle Island; considered best showing to date (FO overflight)
- Crescent Inlet - a few schools observed at mouth estimated at 7-800 chum
- Echo Harbour- couple jumpers observed
- Salmon River - couple jumpers observed off mouth, estimated 500 chum in river
- Crescent Inlet - estimated 14,500 pink up inlet, 1,800 at head, with a few jumpers in entrance
- scattered jumpers in Darwin Sound
- Echo Harbour - past pink escapement to week ending August 30 (FO):

Year	Esc	Outside	Final Esc
1982	75	1,200	15,000
1980	3,500		9,500
1978	1,000		12,500

- Crescent Inlet - past pink escapement to week ending Sept 1:

Year	Esc	Outside	Final Esc
1982	0	800	18,000
1980	0	3,500	4,500
1978	13,500		18,000

- Salmon River - past pink escapement to week ending Sept 2:

Year	Esc	Outside	Final Esc
1982	30	200	8,000
1980	1,400		7,000
1978	100		3,000

Aug 30
- good showing of finners, jumpers and pink throughout Crescent Inlet (QCI advisor)
- total to date escapement to Crescent, Salmon and Echo estimated at 50,000 pink (FO)
- Crescent Inlet - 1-2 small schools, 1 jumper observed at head

Sept 5
- Darwin 3 schools of chum observed (overflight)
- nothing observed at Echo or Salmon

Appendix 9. (cont'd)

Date	Stock assessment record
Sept 6	- Darwin Sound - nothing showing (P)
Sept 10	- nothing observed at Crescent or Darwin (BCP overflight)
Sept 11	- Darwin - 2 chum jumpers observed off Richardson Pass (FO overflight)
	- Richardson - 2 chum jumpers observed
	- Atli - 3 chum jumpers observed
Sept 13	- Darwin Sound - nothing observed (P)
	- estimated 12-15,000 chum outside Klunkwoi Bay
Sept 16	- Atli - a few jumpers observed off Sandy Creek (P)
	- Crescent - 2 chum jumpers observed
Sept 17	- Crescent Inlet - estimated 3,000 chum off inlet (P)
	- Logan - 3 chum jumpers observed
Sept 19	- Crescent Inlet - estimated 4-6,000 chum, quite a few good schools observed (P)
Sept 23	- estimated 6-8,000 chum between Shuttle Island and Crescent Inlet (P)
	- some chum observed south of Shuttle Island, and off Reef Island
	- Echo Harbour - estimated 28,000 pink in creek (Arrow Post)
	- Crescent Inlet Creek - estimated 50 chum in creek, 800-1,000 in inlet
	- Salmon River - no chum observed
	- Logan Inlet - 7-8 chum jumpers observed
	- Porter Head - 3 chum jumpers observed
	- Darwin - more fish showing, little schools with no major body (BCP overflight)
	- Shuttle Island to Crescent Inlet - estimated 6-8,000 chum (Arrow Post); some fish observed south of Shuttle Island (seine fishermen)
Sept 24	- scattered chum jumpers observed from Richardson Point to Shuttle Island (FO overflight)
	- Crecsent Inlet - several jumpers but no schools observed
	- Lockeport - a few jumpers observed
Sept 26	- Crescent Inlet - 3 schools observed, no estimate (FO overflight)
	- Lockeport to Shuttle Island - estimated 7,000 chum, poor viewing conditions
Sept 27	- Darwin Sound - fish still showing outside (P)
	- estimated 500 chum from Crescent Point to Crescent mouth
	- Salmon River - nothing observed at mouth, 1 chum up river
Sept 28	- no jumpers observed in Richardson Pass and Logan Inlet (Arrow Post)
	- couple small schools observed at Shuttle Island
Sept 29	- Shuttle Island - good chum showing (QCI advisor overflight)
	- Crescent Inlet - nothing observed
	- Richardson Pass - a couple jumpers observed
	- Crescent Inlet - scattered small schools, estimated 2-300 chum total, 20 chum observed at mouth (FO overflight)
	- Salmon River - nothing observed at mouth, a few jumpers outside
	- Echo Harbour - a few jumpers observed outside and in Darwin Sound
	- Crescent Point-Echo Harbour - several large schools observed, estimated at 20-25,000 chum
Oct 1	- Anna Inlet Creek - estimated 200 chum off mouth (P)
	- Crescent Inlet - estimated 150-200 chum at mouth
	- Crescent Point - good showing of the chum around point, estimated 2,000 chum inside
	- Darwin - good showing in sound; fish jumping were dark (BCP overflight)
Oct 2	- Darwin - fish still in middle of sound, some fish moving towards Crescent Point (FO)
	- Anna Inlet Creek - estimated 200 chum at mouth
	- Crescent Inlet - estimated 150-200 chum at mouth, 2,000 at entrance
	- Salmon River - estimated 3-500 chum in, 700-1,000 at mouth
	- good showing of jumpers at Crescent Point

Appendix 9. (cont'd)

Date	Stock assessment record
Oct 3	- Atli - 3 chum jumpers observed (Arrow Post)
Oct 4	- fish still in Darwin Sound but not showing as well (FO)
	- McEchran Cove - few small schools moving in, estimated at 1,000 chum
	- Crescent Inlet - few schools observed at entrance
	- Logan Inlet - 3 jumpers observed in A.M. (P)
Oct 5	- Salmon River - fish starting to move inside, still showing outside, estimated 2,500 chum up river (FO)
	- Powrivco Creek - estimated 700 fresh chum (CF)
	- Richardson Creek - estimated 600 chum up creek (P)
Oct 6	- Salmon River - fish not showing well off river (P)
Oct 7	- Darwin Sound - poor viewing conditions (P)
	- Salmon River - high water, estimated 4-5,000 chum in stream
	- McEchran Cove-Klunkwoi Bay - estimated 15-25,000 chum
	- Logan Inlet - good showing of jumpers at north shore estimated at 4-5,000 chum
	- Crescent Inlet - estimated 800-1,000 chum at mouth of creek
	- Powrivco Creek - estimated 700 chum up creek
	- Richardson Creek - estimated 700 chum up creek
	- Moore Creek - estimated 1,400 chum up creek
	- Sandy Creek - estimated 1,450 chum up creek
Oct 8	- Crescent Inlet - estimated 2,250 fresh/2,350 chum in creek (P)
Oct 9	- considerable movement of Salmon River stocks out of Klunkwoi Bay (FO)
Oct 10	- very good showing of jumpers around Klunkwoi Rock (Arrow Post)
	- Logan Inlet - a few jumpers observed in A.M.
	- fish in Logan Inlet bright, fish near Klunkwoi Bay mostly dark
	- Darwin Sound - estimated escapement to date of 6,000 chum, optimum of 30,000 (FO)
	- Powrivco - estimated 1,500 chum up creek (P)
Oct 11	- Darwin Sound - estimated 40,000 chum behind boundary (FO)
Oct 12	- good showing of chum in front of Salmon River (Arrow Post)
Oct 13	- McEchran Cove - 11 schools observed for 2,500 chum of Salmon River (FO overflight)
	- Klunkwoi Bay - 15-20 schools observed for an estimated 3,500-5,000 chum, 12-15,000 chum outside
	- Darwin Sound - a few chum jumpers observed outside
	- Salmon River - estimated 700 fresh/4,000 chum in river (P)
	- Atli - a few chum jumpers observed
Oct 15	- Darwin Sound - good showing of jumpers from Darwin Sound to Klunkwoi falls (P)
	- Crescent Inlet - no jumpers observed
	- Crescent Inlet Cr.-estimated 500 fresh/2,850 chum in creek
	- Logan Inlet - no jumpers observed
Oct 17	- Richardson Creek - estimated 600 fresh/1,200 chum in creek(P)
	- Atli Inlet - 2 jumpers observed in inlet, 2 jumpers off Sandy Creek
	- Powrivco Bay - 3 small schools observed
	- Logan Inlet - no jumpers seen
	- Salmon River - estimated total to date of 6,000 chum (FO)
	- Darwin - 15,000 chum estimated outside with fish still moving in then backing out into Darwin Sound (P)
	- Anna Inlet Creek - estimated 100 fresh/300 chum in creek (P)
	- Lockeport Creek - estimated 30 chum in creek
	- Echo Harbour Creek - estimated 10 chum in creek (P)
Oct 18	- no jumpers observed in Logan Inlet or Dana Pass (P)
	- Costan Creek - estimated 450 fresh chum in creek
Oct 21	- Salmon River - estimated 2,000 fresh/8,000 chum in river (P)
Oct 22	- Darwin Sound - estimated 40,000 chum in sound (CF)
	- Salmon River - estimated 7,000 chum at mouth (P)
	- viewing conditions poor due to heavy fog
	- good showing of chum between Klunkwoi Rocks to outside of Crescent Point
	- McEchran Cove - estimated escapement of 15,000 chum inside, a few jumpers observed outside

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[a] Data sources: P - patrolman, BCP - B.C. Packers, FO - fishery officer, CF - commercial fisherman, Arrow Post - DFO fishery vessel.

Appendix 10. Chronological assessment records for Juan Perez Sound, Skincuttle Inlet and southern South Moresby Island chum stocks, 1984 (R. Brahniuk, DFO, pers. comm. ; data sources are shown in parentheses and explained in footnote 'a').

Date	Stock assessment record
Sept 6	- Carpenter Bay - some chum jumpers observed outside (P)
	- Sedgwick Bay - no sign
	- Kostan Inlet - few chum observed at mouth
Sept 7	- Skincuttle, Tangle Creek, George Bay, Bag Harbour - nothing showing (BCP overflight)
Sept 10	- nothing observed in evening flight over Juan Perez or Skincuttle (BCP overflight)
Sept 11	- Harriet Bay - estimated 50 chum (BCP overflight)
	- Sedgwick Bay - good showing with an estimated 10-12 small schools of chum (FO)
	- two chum jumpers observed on the west side of Huxley Island (FO overflight)
	- Skincuttle and Swan Bay - a few chum jumpers observed
	- Ikeda - 6 chum jumpers observed
	- Collison Bay - 2 chum jumpers observed
	- Jedway - 1 chum jumper observed
Sept 13	- Sedgwick Bay - 20 schools observed in middle of bay (FO overflight)
Sept 17	- Huxley Island - no jumpers observed (P)
	- Sedgwick - good showing of jumpers
Sept 18	- Burnaby Narrows - 6 chum jumpers observed (P)
Sept 19	- nothing observed in Juan Perez-Atil area (BCP overflight)
	- Huston Inlet - 200 chum observed off mouth
	- Sedgwick Bay - 4 schools observed consisting of an estimated 2,000 chum
	- Harriet Harbour - 5-600 chum observed off mouth
	- Skincuttle-George Bay - estimated 600 up stream (P)
	- Slim Inlet - estimated 75 chum up stream
	- Bag Harbour - estimated 250 chum up stream, 150 at mouth
Sept 23	- Skincuttle - very little showing (Arrow Post)
	- Poole Inlet - 2 chum jumpers observed (BCP overflight)
	- Jedway - 20 chum observed
	- Huston Inlet - 3 chum jumpers observed, estimated 150 on flats
	- Sedgwick - estimated 2,000 chum
	- Juan Perez - 2 chum jumpers observed beside Section Cove
	- Harriet Bay - estimated 200 chum
	- first showing of fish in Juan Perez, Huston and Jedway, mainly at high water
	- Sedgwick - a few chum jumpers observed (Arrow Post)
Sept 24	- Sedgwick Bay - nothing observed up creek, estimated 4-500 chum at mouth, 3-5,000 holding in bay, 2 schools for 1,000 on east shore (FO overflight)
	- Section Cove - 1 jumper observed inside, several outside
	- Burnaby Strait - 1 chum jumper observed
	- Poole Inlet - 2 schools estimated at 500-1,000 chum, several single jumpers observed
	- Copper Island - 3 single jumpers observed on south side of Island
	- Hustan Inlet - 3 single jumpers observed
Sept 26	- Sedgwick Bay - estimated 350 chum inside, 3-4 bunches with 50 to 100 chum each outside (FO overflight)
	- Huxley Island - nothing observed
	- Newbury Point-Werner Bay - several small schools of chum observed
Sept 28	- Bag Harbour - estimated 100 chum in creek, 3-500 at mouth (P)
	- Tangle Cove - estimated 350 chum at mouth
	- George Bay - estimated 300 chum at mouth
	- Slim Inlet - estimated 100 chum at mouth
	- Harriet Creek - estimated 300 chum at mouth
	- Island Bay - nothing observed
	- Huxley Island - several schools observed with a total estimated escapement of 5-7,000 chum
Sept 29	- Harriet Bay - estimated 7-800 chum (QCI advisor overflight)
	- Huston Inlet - few jumpers observed on flats
	- Huxley/Section Cove - a few jumpers observed

Appendix 10. (cont'd)

Date	Stock assessment record
Sept 29 (cont'd)	- Sedgwick - fish observed at head, nothing at mouth, estimated 8-9,000 chum in bay (FO overflight)
	- W. Huxley - estimated 7-8,000 chum in area
	- Bag Harbour - a few coho observed on flats
Oct 1	- some movement of fish from Huxley Island to Burnaby Strait, moving south (P)
	- good showing of fish in Sedgwick, Juan Perez (BCP overflight)
	- Sedgwick - estimated over 10,000 chum, with good quality jumpers at entrance
Oct 2	- Huxley Island - still a good showing of chum with fish moving towards Burnaby Narrows (P)
	- Bag Harbour - estimated 360 chum in creek, 1,200 at mouth
	- Tangle Cove - estimated 150 chum in creek, 500 at mouth
	- George Bay - estimated 900 chum at mouth
	- Harriet Harbour Creek - estimated 290 chum with 400 at mouth
	- Sedgwick Bay Creek - estimated 190 chum up creek, 1,000 at mouth under choppy water conditions
Oct 3	- Huxley Island area - fish not showing, appear to have moved outside area; probably went into Skincuttle (P)
	- Alder Island Creek - 3 chum observed
	- Section Cove - 13 chum observed
	- Skaat Harbour - 150 chum observed
Oct 4	- Huston Inlet - estimated 400 chum at mouth (P)
	- Jedway Bay - estimated 120 chum up creek, 200 at mouth
	- Bag Harbour - poor showing of chum
Oct 5	- Burnaby Strait - 1 school of chum, no estimate (P)
	- Huxley Island - 3 chum jumpers
	- Metheson Inlet Creek - high water, no chum observed
	- Bag Harbour Creek - estimated 2,100 chum up, 200 at mouth
	- Slim Inlet - estimated 3,250 chum up, 250-300 at mouth
	- two days after Huxley Island fish disappeared, chum were observed moving into Skincuttle creeks
	- Skincuttle - estimated escapement of 8,000 chum
	- Harriet Harbour Creek - estimated 290 chum in stream, 200 at mouth
Oct 6	- Skincuttle - poor weather conditions limited assessment (P)
Oct 7	- Huston Inlet - estimated 700 chum at mouth, 1,550 up creek
	- Sedgwick - some jumpers off mouth, water too high for good observation
Oct 8	- Bag Harbour - estimated 1,000 chum in bay (P)
	- Harriet Harbour - estimated 2,150 fresh/2,300 chum in stream, 2 small schools out front
	- Jedway - estimated 420 fresh/480 chum in stream, 150 chum out front
	- Sedgwick - estimated 2-3,000 chum along east side, 2,700-3,000 in creek, a few jumpers observed in bay
Oct 11	- N. Marco Island, Juan Perez Sound - a few schools of chum showing, no estimate (P)
	- fair showing of chum jumpers in Burnaby Strait
	- Section Cove Creek - estimated 42 fresh/55 chum in stream
	- Forgotten Creek - estimated 630 chum in stream, 200 at mouth
Oct 12	- chum showing at Huxley Island (P)
Oct 14	- Skaat Harbour 1st RH - estimate 120 chum in stream (P)
	- Island Bay RH - estimated 430 chum in creek, 100 at mouth
	- Island Bay HD - estimated 200 chum at mouth
	- Tangle Cove - estimated 1,830 chum up creek, 250 outside
	- Slim Inlet - estimated 1,850 fresh/5,525 chum in stream, nothing at mouth
	- Skincuttle - estimated total to date escapement of 20,000 chum in streams
Oct 15	- Alder Island Creek - estimated 700 chum in streams, 250 outside (P)
	- Section Cove Creek - estimated 200 chum in creek
	- Marker Creek - estimated 130 chum in creek
	- Burnaby Narrows Creek - estimated 150 chum in creek
	- Juan Perez - estimated total to date escapement of 6,600 chum in streams

Appendix 10. (cont'd)

Date	Stock assessment record
Oct 15 (cont'd)	- Surprise Creek - estimated 750 chum up creek, 150 outside
	- Middle Creek - estimated 175 chum in creek
	- Small Creek - estimated 25 chum in creek
	- Huston Inlet - estimated total to date escapement of 2,900 chum
	- outer Skincuttle - no jumpers observed
	- Ikeda Cove - estimated 2,750 chum up creek, 300 outside
Oct 17	- Harriet Harbour - estimated 950 fresh/3,350 chum in stream, 200 outside (P)
	- Bag Harbour - estimated 5,160 chum in creek, 900 at mouth
	- George Bay - estimated 1,250 fresh/6,100 chum in stream
	- Tangle Cove - nothing observed at mouth, estimated 1,800 chum up creek, 250 observed outside
	- Poole Inlet - estimated 740 chum in stream, 750 at mouth
	- Skim Inlet - estimated 5,250 chum up creek, a few jumpers outside
	- Huston Inlet - estimated 2,900 chum in creek, 300 outside
	- Jedway Bay - estimated 420 chum up creek, nothing outside
	- Sedgwick Bay - estimated 350 fresh/3,350 chum in stream, good showing off mouth estimated at 2-3,000 chum
Oct 18	- Hutton Inlet LH Creek- estimated 220 in creek, total to date estimated escapement of 300 chum (P)
	- Hutton Inlet Head Creek - estimated 375 chum in creek, total to date estimated escapement of 425 chum
Oct 21	- Raspberry Cove - 6 chum observed
	- Roes Harbour Creek - 11 chum observed, 45 at mouth (P)
	- Sedmond Creek - estimated 150 fresh/5,000 chum in creek
	- Landrick Creek - estimated 600 fresh/750 chum in creek
	- Gate Creek - estimated 400 chum up creek
	- Matheson LH - estimated 450 chum in stream, nothing at mouth
	- Sedmond - estimated fresh/5,000 chum in creek

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[a] Data sources: P - patrolman, BCP - B.C. Packers, FO - fishery officer , Arrow Post - DFO fishery vessel.

Appendix 11. Pallant Creek daily chum salmon fence counts and mean run timing data, 1980 - 1984.

DATE	1980			1981			1982			1983			1984			AVG RUN TIMING
	CHUM ESC	CUM ESC	% ESC	CHUM ESC	CUM ESC	% ESC	CHUM ESC	CUM ESC	% ESC	CHUM ESC	CUM ESC	% ESC	CHUM ESC	CUM ESC	% ESC	CUM %
AUG 30										1	1	0.00				0.00
31										1	2	0.01				0.00
SEPT 1							1	1	0.02		2	0.01				0.01
2	8	8	0.08	19	19	0.07	3	4	0.07	2	4	0.01				0.05
3	6	14	0.14		19	0.07		4	0.07		4	0.01	54	54	0.17	0.09
4	8	22	0.22	14	33	0.11	2	6	0.11	4	8	0.03	22	76	0.23	0.14
5		22	0.22	13	46	0.16		6	0.11	7	15	0.06	10	86	0.27	0.16
6		22	0.22	11	57	0.20	11	17	0.31	11	26	0.10	2	88	0.27	0.22
7		22	0.22	8	65	0.23		17	0.31	2	28	0.10	16	104	0.32	0.24
8	3	25	0.25	25	90	0.31	2	19	0.34		28	0.10	7	111	0.34	0.27
9	5	30	0.30		90	0.31		19	0.34	1	29	0.11	7	118	0.36	0.29
10	7	37	0.38	12	102	0.35	2	21	0.38	10	39	0.15	35	153	0.47	0.35
11		37	0.38	20	122	0.42		21	0.38	2	41	0.15	21	174	0.54	0.37
12		37	0.38	14	136	0.47	2	23	0.42		41	0.15	10	184	0.57	0.40
13		37	0.38	10	146	0.51	1	24	0.43	21	62	0.23	67	251	0.78	0.47
14		37	0.38	72	216	0.76		24	0.43	7	69	0.26	82	333	1.03	0.57
15		37	0.38	37	255	0.88		24	0.43	3	72	0.27	162	495	1.53	0.70
16	4	41	0.42	50	305	1.06		24	0.43	13	85	0.32	268	763	2.36	0.92
17		41	0.42	94	399	1.38	1	25	0.45	8	93	0.35	117	880	2.72	1.06
18	3	44	0.45	41	440	1.52		25	0.45	10	103	0.38	60	940	2.91	1.14
19		44	0.45	8	448	1.55	1	26	0.47	10	113	0.42	125	1065	3.29	1.26
20	40	84	0.85		448	1.55		26	0.47	31	144	0.54	19	1084	3.35	1.35
21	1	85	0.86	14	462	1.60	4	30	0.54	16	160	0.60	109	1193	3.69	1.46
22	11	96	0.97		462	1.60	4	34	0.61	18	178	0.66	227	1420	4.39	1.65
23	13	109	1.11	20	482	1.67		34	0.61	12	190	0.71	68	1488	4.60	1.74
24		109	1.11	20	502	1.74	5	39	0.71	1048	1238	4.61	151	1639	5.07	2.64
25	8	117	1.19	7	509	1.76	1	40	0.72		1238	4.61	238	1877	5.80	2.82
26	6	123	1.25	43	552	1.91		40	0.72		1238	4.61	422	2299	7.11	3.12
27		123	1.25	324	876	3.03		40	0.72		1238	4.61	296	2595	8.02	3.53
28	7	130	1.32	72	948	3.28	2	42	0.76		1238	4.61	433	3028	9.36	3.87
29	184	314	3.19	301	1249	4.33	3	45	0.81	17	1255	4.67	224	3252	10.06	4.61
30	101	415	4.21	2074	3323	11.51	13	58	1.05	46	1301	4.84	129	3381	10.45	6.41
OCT 1	175	590	5.99	189	3512	12.16	28	86	1.56	122	1423	5.29	565	3946	12.20	7.44
2	295	885	8.98	388	3900	13.51	1	87	1.57	99	1522	5.66	213	4159	12.86	8.52
3	383	1268	12.87	327	4227	14.64	72	159	2.88	424	1946	7.24	200	4359	13.48	10.22
4		1268	12.87	392	4619	16.00	66	225	4.07	71	2017	7.50		4359	13.48	10.78
5	6000	7268	73.78	584	5203	18.02	297	522	9.44	275	2292	8.52	246	4605	14.24	24.67
6		7268	73.78	1599	6802	23.56	572	1094	19.76	35	2327	8.66	262	4867	15.05	28.16
7		7268	73.78	262	7064	24.46	536	1630	29.48	325	2652	9.87	1500	6367	19.69	31.45
8		7268	73.78	118	7182	24.87	170	1800	32.55	1747	4399	16.36		6367	19.69	33.45
9		7268	73.78	340	7522	26.05	792	2592	46.87	344	4743	17.64	129	6496	20.09	36.89
10		7268	73.78	101	7623	26.40		2592	46.87	124	4867	18.11	644	7140	22.08	37.45
11	2	7270	73.80	649	8272	28.65	327	2919	52.78	212	5079	18.89	391	7531	23.29	39.48
12	161	7431	75.43	3000	11272	39.04	81	3000	54.25	431	5510	20.50	76	7607	23.52	42.55
13	110	7541	76.55	99	11371	39.38	62	3062	55.37	472	5982	22.25	1000	8607	26.61	44.03
14	52	7593	77.08	419	11790	40.83	64	3126	56.52	210	6192	23.03	100	8707	26.92	44.88
15	130	7723	78.40	5371	17161	59.43	163	3289	59.46	777	6969	25.92	509	9216	28.50	50.35
16	47	7770	78.88		17161	59.43	113	3402	61.52	2436	9405	34.99	370	9586	29.64	52.89
17		7770	78.88	5399	22560	78.13	55	3457	62.51	175	9580	35.64	612	10198	31.53	57.34
18	162	7932	80.52	1600	24160	83.67	20	3477	62.88	1229	10809	40.21	1319	11517	35.61	60.58
19	123	8055	81.77	295	24455	84.70	65	3542	64.05		10809	40.21	794	12311	38.07	61.76
20	278	8333	84.59	39	24494	84.83	214	3756	67.92	4209	15018	55.87	294	12605	38.98	66.44
21		8333	84.59	141	24635	85.32	118	3874	70.05	5172	20190	75.11	1632	14237	44.02	71.82
22	99	8432	85.60	50	24685	85.49	156	4030	72.88	2869	23059	85.78	2970	17207	53.20	76.59
23	144	8576	87.06	1672	26357	91.28	402	4432	80.14	1823	24882	92.56	6634	23841	73.72	84.95
24	770	9346	94.87		26357	91.28	214	4646	84.01	2000	26882	100.00	3500	27341	84.54	90.94
25	433	9779	99.27	1500	27857	96.48	116	4762	86.11				5000	32341	100.00	
26		9779	99.27	1017	28874	100.00	408	5170	93.49							
27	72	9851	100.00				120	5290	95.66							
28							240	5530	100.00							
29																
30																
TOTAL	9851	9851		28874	28874		5530	5530		26882	26882		32341	32341		

NOTE: 1980 - approx. 4 chums passed through fence prior to Aug.25.
- fence out Oct. 27 @ 1100 hrs.
- fence temporarily out: Oct. 5-11.

1981 - approx. 8 chums passed through fence prior to Aug.25.
- fence out Oct. 26; approx. 2000 chum entered river at this time.
- fence temporarily out: Sept. 7,8,9,30, Oct. 1 - approx. counts only.
- approx. counts only: Oct. 12,25,26.

1983: - fence out Sept. 24 @ 1000 hrs.
- fence in Sept. 25 @ 1200 hrs.
- fence out Oct. 20 @ 1100 hrs.
- fence in Oct. 20 @ 1215 hrs.
- Oct. 24- Oct. 26 estimate 2000 chum.

1984: - fence in Sept. 3 @ 1600 hrs.
- fence out Oct. 3 @ 09:30 hrs.
- fence in Oct. 4 @ 1600 hrs.
- fence out Oct. 5 @ 1600 hrs.
- fence in Oct. 6 @ 0900 hrs. fence out @ 1500 hrs.
- fence out Oct. 7
- fence in Oct. 8 @ 1600 hrs.
- fence out Oct. 11 @ 0300 hrs. fence in @ 1330 hrs.
- fence out Oct. 12 @ 0500 hrs.
- fence in Oct. 14 @ 1300 hrs.
- fence out Oct. 25 @ 0900 hrs.

Appendix 12. Gillnet test fishing abundance indices at specific sites in Cumshewa Inlet, 1982 and 1984 (numbers in parenthesis indicate weekly means).

	1982				1984						
	AVERAGE DAILY CHUM CATCH/HOUR				AVERAGE DAILY CHUM CATCH/HOUR						
DATE	KITSON	MCLELLAN	RENNER	CONGLOMERATE	CONGLOMERATE		RENNER		HOLDING AREA		MCLELLAN
SEPT 7	2.52			1.56							
9				.94							
12				1.61	14.3		7.71		13.20		
13					5.5		5.71		11.71		
14					7.4		15.00		28.00		
15					7.05		3.58		7.00		
16					12.43		24.18		5.09		
17					13.71	-----	27.19	-----	0.95	-----	10.86
18	3.69	1.50			15.38	(10.82)	3.05	(12.35)	10.00	(10.85)	
19	3.27	0.47	5.35		4.40		7.10		7.32		
20	9.86	0.00			14.39		7.50		5.08		
21	4.96	2.31			9.58		16.62		1.03		
22	2.61	2.45	4.48								
23	10.14		0.88	8.98	5.26		1.00		7.00		
24					8.29	-----	8.57	-----	40.27	-----	
25		0.92		1.73	24.32	(11.04)	11.80	(8.77)	18.26	(13.16)	
26		0.89	6.97								
27	13.24	0.88	13.42	3.56							
28	2.55	3.29	3.56	3.27	10.85		0.94		7.22		
29	4.62	3.65	3.31		22.46		0.61		11.50		
30	8.06	4.80		1.66	21.63	-----	4.21	-----	11.79	-----	
OCT 1					29.69	(21.16)	1.05	(1.70)	3.10	(8.40)	
2		1.69									
3	30.00	0.79			16.55		0.98		24.80		
4	7.14	3.06		26.15	10.91		0.95		70.13		
5			17.03	12.75							
6	10.54	7.16	4.23	7.44							
7	3.56	8.41	9.76	17.87	45.13		6.46		65.54		
8	4.90	0.00		12.00	21.00	-----	8.00	-----	62.00	-----	
9	11.25		12.78	13.25	8.00	(20.32)	12.00	(5.68)	1.00	(44.69)	
10	7.32	3.43	0.00	42.23	16.30		31.20		25.07		
11	9.47		9.47	8.52	13.68		1.96		35.68		
12	1.54		7.61	6.67							
13					12.16		3.75		49.25		
14					7.53		7.62		26.47		
15					12.86	-----	11.30	-----	0.00	-----	
16					7.61	(11.69)	7.06	(10.48)	8.96	(24.24)	
17					4.46		5.00		0.98		
18											
19					9.15		13.33		3.00		
20					4.01		27.35		10.00		
21					11.03	-----	3.00	-----	2.03	-----	
22					5.90	(6.91)	2.31	(10.20)	12.22	(5.65)	